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**U.S. National Defense Acquisition and Budgetary Policy in an
International Perspective**

3 December 2011

by

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Abstract

Although domestic laws, rules and norms shape defense acquisition in the United States (U.S.), budgeting and financial management policy and practice decisions made in the executive and legislative branches of the U.S. government regarding how to spend defense financial resources have a powerful impact on the international security environment and the strategic choices of other nations. Understanding the interaction effects between U.S. defense weapons and weapons system planning, acquisition and execution and related budgeting/fiscal policy and the reactions of other nations to it all is vital if U.S. defense management processes are to succeed in achieving the objective of preparing U.S. armed forces to fulfill the U.S. government's national, international, and foreign policy goals. This report examines U.S. defense weapons acquisition and budgeting from an international perspective. Within this context, answers are sought to the following questions. First, what are the effects of U.S. defense acquisition, defense assets, and budgets on the international development and diffusion of new military technologies? Second, what factors drive U.S. arms export decisions? Third, how do U.S. policies shape the international market for armaments? Finally, do U.S. decisions about how much to spend on national defense drive those of other nations through "arms races" and burden-sharing? This report addresses a number of policy and process issues related to these questions and provides a summary and conclusions of findings.

Keywords: arms exports, burden sharing, arms race, arms transfer policies, licensed production, arms export policy, defense-industrial autonomy, international arms trade, defense technology transfer



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Disclaimer: The views represented in this report are those of the author and do not reflect the official policy position of the Navy, the Department of Defense, or the Federal Government.



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I. Introduction: U.S. Defense Policy and Relationships With Other Nations Around the World

Although domestic laws, rules and norms shape defense acquisition in the United States (U.S.), budgeting, and financial management policy and practice, decisions made in the executive and legislative branches of the U.S. government regarding how to spend defense financial resources have a powerful impact on the international security environment and the strategic choices of other nations. Understanding the interaction effects between U.S. defense weapons and weapons system planning, acquisition and execution and related budgeting/fiscal policy and the reactions of other nations to it all is vital if U.S. defense management processes are to succeed in achieving the objective of preparing the U.S. armed forces to fulfill the U.S. government's foreign policy goals. This report examines U.S. defense weapons acquisition and budgeting from an international perspective.¹ Within this context, answers are sought to the following questions.

- 1) What are the effects of U.S. defense acquisition, defense assets, and budgets on the international development and diffusion of new military technologies?
- 2) What factors drive U.S. arms export decisions?
- 3) How do U.S. policies shape the international market for armaments?
- 4) Do U.S. decisions about how many resources to devote to national defense drive those of other nations through "arms racing" and/or burden-sharing?

At base, the U.S.'s role as the world's largest investor in defense has led to its preponderant role in the world in the development of new military technologies. This situation relegates most other nations to the position of selective imitators insofar as

¹ The data in this report were derived from the defense spending and export data sets compiled by the Stockholm International Peace Research Institute (SIPRI, 2011).



they observe the U.S. Department of Defense's (DoD) decisions attentively and emulate practices and technologies that appear successful. In principle, although this dynamic confers *military* advantages on the U.S. because it generally fields innovative weaponry before other nations, this dynamic also confers *economic* benefits on nations that accept the status of technological second-movers. They can dispense with many of the risks and inevitable economic losses inherent in striving for innovation. In their efforts to appropriate U.S. military technologies in an economic and timely manner, allies actively seek technology transfers from the U.S. When permitted, such transfers can be unilateral, reciprocal, or commercial in nature. Denied these opportunities, potential rivals of the U.S. have, in some cases, turned to espionage or have attempted to acquire U.S. technology via third parties.

Besides granting the U.S. a preponderant role in the development and diffusion of new military technology, the U.S.'s large defense expenditures also shape the international arms trade. Because the U.S. procures sizeable quantities of weaponry for its armed forces, its defense industries benefit from the scale and learning economies generated by the world's largest internal defense market. When combined with the effects of high defense research and development (R&D) budgets, this enables U.S. defense industries to, as a rule, offer weapons that are more innovative and cost effective than the competition's. For this reason, U.S. arms manufacturers win a large proportion of the contracts for which they compete. However, despite the economic advantages of exporting weaponry, there are strong countervailing reasons for not selling specific weapons systems to certain nations. Injudicious defense exports can compromise sensitive technologies, strengthen potential adversaries, and fuel regional arms races.

To weigh the merits of a given arms sales, the U.S. has developed procedures that incorporate a plurality of interest groups and government actors into a (comparatively) transparent process. Within this context, the White House, Congress, the State Department, and the Department of Defense all contribute to decisions about what weapons to export and to whom. Overall, although the U.S.



arms export decision-making process may appear balanced from the point of view of U.S. domestic politics and foreign relations, would-be importers perceive it as restrictive, unpredictable, and unreliable. As a consequence, foreign nations frequently face a dilemma as to whether they should adopt an *efficient* course of importing cost-effective U.S. weaponry or pay considerable premiums in terms of more expensive weapons and foregone military capabilities to achieve a greater degree of defense-industrial autonomy.

In their efforts to compromise between the competing goals of efficiency and autonomy, many nations purchase weapons from multiple suppliers, manufacture U.S.-designed weapons under license, or develop indigenous weapons based on U.S. technology. Because arms export statistics ignore licensed production and many sub-system exports, the fact that U.S. companies account for approximately 35% of international arms export contracts (by value) understates the U.S.'s critical role in the international transfer of military capabilities (SIPRI, 2011). For nations that seek the highest level of defense-industrial autonomy attainable through the indigenous development and production of weaponry, a combination of unrestrained arms sales and generous export subsidies is a *sine qua non* for achieving the volumes of export sales needed to sustain an independent defense-industrial base.

Although the U.S.'s defense budgeting plays a crucial role in shaping how weaponry is developed, produced, and diffused across the globe, the impact of U.S. defense budgets on other nations' decisions about how many resources to dedicate to defense appears comparatively modest. Despite the historic importance of arms racing amongst rival great powers and burden-sharing amongst allied nations, there exists no convincing evidence that either rivals or allies are basing their decisions about how much to spend on defense on U.S. defense budgeting trends. Ironically, the reasons for the disconnectedness of the U.S.'s defense expenditures with those of other nations, whether allied or not, with the U.S. at a high level of U.S. expenditures, need to be explored. Thus, although virtually all potential rivals accept as economically counterproductive any attempt to imitate U.S. trends in defense



expenditure and weapons and weapons system acquisition, its allies are more willing to free ride, in economic terms, on the U.S.'s provision of security than to share the economic burden of providing for mutual defense.



II. U.S. Defense Acquisition, Budgeting, and Military Innovation

Any analysis of the impact of the U.S.'s defense budget, and what it buys in terms of weaponry and weapons systems, on other nations needs to begin with an examination of the predominance of the U.S. investment in defense. No other nation has attempted to match the U.S.'s defense spending since the U.S. implemented substantial increases to its defense budget in the early 1980s (SIPRI, 1979, 1987). At that time, Soviet policy-makers accepted that their already over-taxed economy could not afford to dedicate more resources than the 15–40% of its GDP that was already dedicated to defense (Strayer, 1998; Odom, 1998). Since the dissolution of the Soviet Union in 1991, few nations' defense budgets have even approached the same order of magnitude as the U.S.'s. Figure 1 illustrates the gap between the U.S. defense budget and those of the world's other principal military powers (e.g., Brazil, China, India, Japan, Russia, and Western Europe's four largest nations; SIPRI, 2010).



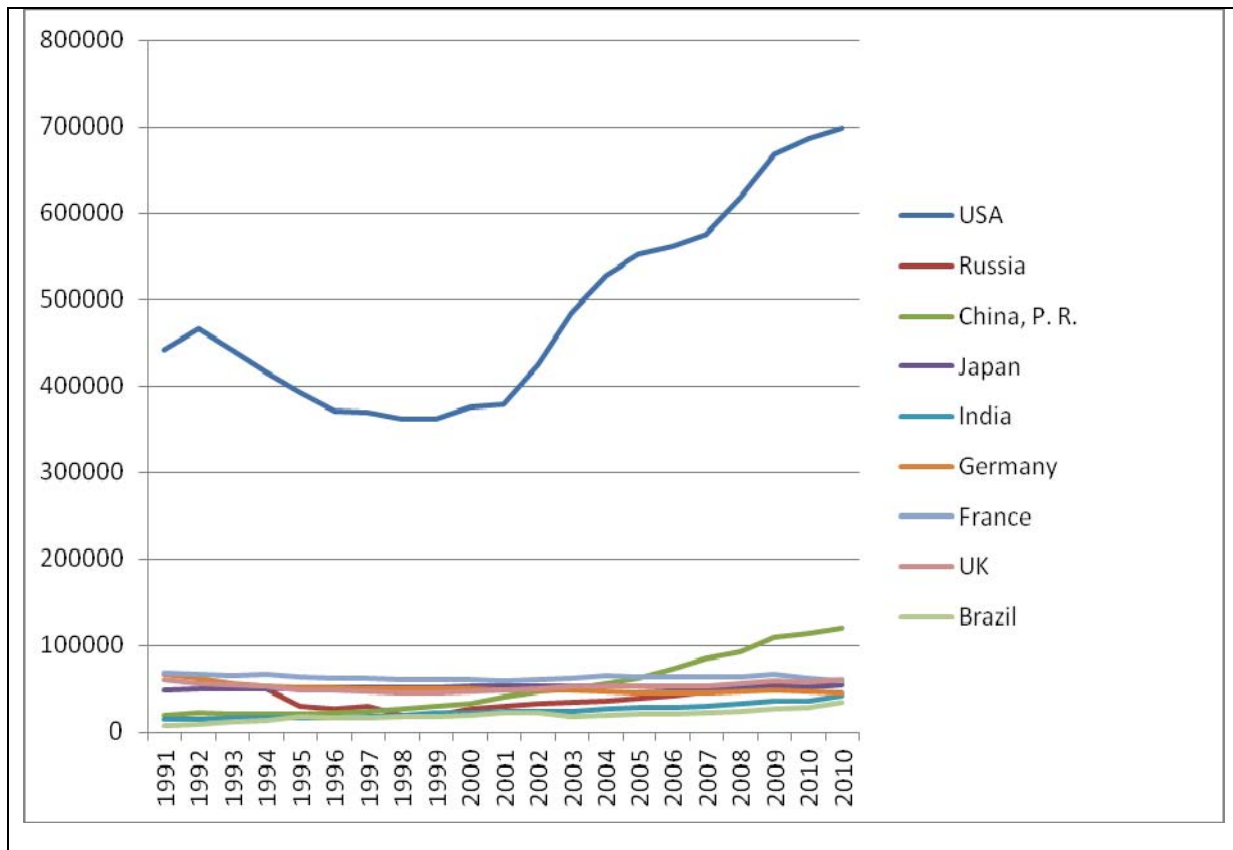


Figure 1. Comparison of U.S. and Other Great Powers' Expenditures (Figures in Millions of Constant 2010 Dollars)

As may be observed in Figure 1, in no year since 1991 has any nation spent even a fifth as much on defense as the U.S. Even accepting that certain budgetary estimates (i.e., China or Russia) may be conservative and that purchasing power parity may enable other nations to achieve better value for their money (a problematic assumption), the size of the U.S. defense budget is unrivaled.

In domains crucial to a nation's future military power, such as defense R&D and procurement expenditures, the gap between the U.S. and other great powers is even more significant. On an annual basis, the U.S. spends six times as much on defense R&D as *all* 27 member nations of the European Union combined (\$79 billion versus \$12 billion for Europe). However, Europe is not a unified nation state and U.S. defense R&D expenditures exceed those of the largest European nations (France and the United Kingdom) by a factor of 15 (European Defence Agency



[EDA], 2009). Even, China, whose defense R&D budget has grown rapidly to a figure of \$4 billion to \$6 billion per annum, spends less than a tenth as much as the U.S. (Henrotin, 2010, p. 56; Bitzinger, 2011, p. 447). Meanwhile, Asia's other major arms producers, India, Japan, and South Korea, each spend approximately \$1.5 billion annually on defense R&D, which is barely one-fiftieth of the U.S.'s investment (Bitzinger, 2011, p. 445).² In short, the U.S. defense R&D effort dwarfs those of any other nation and exceeds that of the rest of the world combined. Moreover, the dimensions of the U.S.'s force structure and the scope of its infrastructure for conducting large-scale operational experiments (i.e., the combined land areas of the Air Force's Nevada Test and Training Range and the Army's National Training Center are larger than Belgium) render it possible to realistically test potential innovations in unique ways. For example, few nations can convert brigade-sized units to an unproved table of organization—as the U.S. did to develop the airmobile concept in the 1960s or the network-centric light armored concept in the 1990s—for the purpose of examining a potentially innovative idea (Tolson, 1973; Stanton, 1987; Jones & Thompson, 2007).

As a result of its comparatively large expenditures, the U.S. has consistently led other powers in introducing new technologies. From stealth aircraft to satellite navigation, electronic flight control systems and network-centric warfare, the U.S. has been the first to field many of the technologies shaping contemporary warfare. The development of new technologies is an inherently risky process, and one reason the high U.S. research and procurement budgets have produced innovation is that they are large enough to absorb failures. Alongside those U.S. projects that have produced genuinely helpful new products, many others failed to live up to expectations. For example, in addition to pioneering the successful stealth technologies used in the F-22 and F-35, the Air Force first invested considerable resources in the severely limited “faceted” stealth design of the F-117, while the

² Japan's actual R&D spending may be higher than the budgeted figure because of the tendency of private firms to conduct R&D and then seek reimbursement through production contracts.



Navy spent approximately \$5 billion on the ill-fated A-12 project, which never reached even the prototype stage (Stevenson, 2000). Besides the risk of pursuing false paths towards genuine innovations, many of the innovative concepts pursued by the U.S. eventually proved unworkable (DeVore, 2010). Such has been the case for exotic satellite-based weaponry, pentomic divisions, and nuclear-powered bombers. To a degree, cancelled projects and discarded ideas are an inevitable by-product of the U.S. system of military innovation.

Most nations lack the resources needed for the trial-and-error process of innovation that the U.S. pursues. Although these nations understand that the first nations to field innovative weapons can reap *military* advantages, they also recognize that there are substantial *economic* advantages to accepting the status of a technological second-mover. As a result, most nations tend to adopt a technology only *after* the U.S. has already demonstrated its viability and cost effectiveness. Ingemar Dörfer applied the term “sub-optimization” to describe this tendency for nations to deliberately rely on only proven technologies and content themselves with performance characteristics falling short of what may be theoretically possible (Dörfer, 1973, p. 18). Norman Augustine, Lockheed’s onetime chairman, supports Dörfer’s contention that substantial economies can be achieved by pursuing lower performance goals. As Augustine argues, “the last 10 percent of performance generates one-third of the cost and two-thirds of the problems” (Augustine, 1982p. 103).

For great powers other than the U.S., developing an acceptable weapon system at an affordable price is more important than fielding a more advanced product than those possessed by other nations. For example, even though three European fighter aircraft (the Eurofighter, Rafale, and Gripen) were developed roughly in parallel to the U.S.’s F-22, and one Chinese project (the J-10) was even launched somewhat later, none of the non-U.S. projects sought to incorporate radically new technologies, such as stealth technologies, Active Electronically Scanned Array (AESA) radars, or super-cruise engines. Only recently, two decades



after the F-22 prototypes' first flights, have Russia (2010) and China (2011) unveiled prototypes of equivalent aircraft. Although these countries have conceded technological leadership, the economic advantages of such an approach are clear. For example, the R&D costs of recent French and Swedish combat aircraft (\$13 billion and \$3 billion, respectively) were substantially lower than those for either the U.S. F-22 or F-35 (\$37 billion and \$49 billion, respectively; Hartley, 2001; GAO, 2006, pp. 56–57; GAO, 2010).³ Although the Chinese and Russian stealth aircraft costs are unknown, both designs adopted established U.S. principles for reducing radar signatures rather than exploring alternative configurations. Thus, although the U.S. pays a premium for innovation, other nations achieve economies by following its technological lead.

Because nations wait in many instances for the U.S. to prove the value of an innovation before pursuing it themselves, they naturally also dedicate substantial efforts to understanding the nature and results of U.S. investments in new military capabilities. Much information is transferred more or less voluntarily to U.S. allies through joint exercises, alliance institutions, and bilateral agreements. However, the mechanisms whereby individual allies receive U.S. technology differ. Israel has principally received unilateral technology transfers (Clarke, 1995), while a range of Anglo-American technological exchange agreements facilitate reciprocal transfers between the U.S. and United Kingdom. Finally, Japan, South Korea, and Taiwan have been permitted to acquire certain technologies commercially from U.S. defense contractors (Lorell, 1995; Bitzinger & Kim, 2005). As a consequence of these different transfer mechanisms, Israeli Python missiles, British Astute-class submarines, Japanese F-2 fighters, South Korea's T-50 training/strike aircraft, and Taiwan's F-CK-1 fighters all bear a notable U.S. technological paternity.

Aside from formal technology transfers, allies emulate many of the promising U.S. projects and organizational innovations they are exposed to. Dedicating far

³ Data in these sources are in constant 2010 U.S. dollars.



fewer resources than the U.S. to developing and experimenting with new military capabilities, most allies wait for the U.S. to prove the value of an approach before investing their own resources in it. For example, the U.S. drive for military transformation—based on the thorough exploitation of digital networks—inspired similar, albeit smaller, programs in France, Germany, and the United Kingdom (Lungu, 2004). In addition, the British Army has followed the U.S.’s lead (Blakeman et al., 2010) in launching a project to equip its expeditionary forces with Mine Resistant Ambush Protected (MRAP) vehicles, while France emulated the U.S.’s Special Operations Command with its own Commandement des Opérations Spéciales in 1992 (Micheletti, 1999; National Audit Office [NAO], 2009). However, the fact that allies selectively adopt U.S. innovations should not be misconstrued as blind emulation. In general, they adapt U.S. concepts to suit their own budgets, needs, and doctrine. One example of this is the British and Canadian embrace of Network-Enabled Operations as a more conservative and less costly version of Network-Centric Warfare, as is advocated by the U.S.

Nations that are not allied with the U.S. have historically scrutinized the U.S.’s defense budget and military operations for what lessons they may convey, while also seeking to appropriate U.S. technologies by whatever means possible. For example, many of China’s dramatic reforms of both its armed forces and defense-industrial base can be traced to an exhaustive Chinese study of U.S. military operations during the 1991 Gulf War (Pollpeter, 2010). Since then, China has attempted to acquire additional insights into U.S. weaponry by purchasing Israeli weapons that incorporate U.S. technology, buying debris from U.S. weapons recovered over South Asia, and technologically exploiting what they obtained from the 2001 Hainan Island Incident, when a SIGINT EP-3 aircraft was briefly interned on the island (Clarke, 1995; Fisher, 2007, p. 145; Hewson, 2008; Migdalovitz, 2008, pp. 29–33). Sometimes, other great powers’ efforts to understand the implications of U.S. military developments have resulted in analyses superior to those conducted in the U.S. itself. Indeed, the roots of contemporary U.S. debates on the revolution in military affairs (RMA) and in military transformation can be traced to Soviet studies



from the 1980s on trends in U.S. military power (DeVore, 2010; Gareev, 1998; Krepinevich, 1992; Salmonov, 1988).

One indirect, yet consequential, effect of the U.S.'s preponderant investment in innovation is its role in setting international standards for military interoperability. Through organizations such as the NATO Standardization Organization (NSO) and Partnership for Peace (PfP), a large number of nations are exposed on a regular basis to U.S. technological standards. More often than not, U.S. standards become either the de facto or de jure international standards because these organizations strive to improve interoperability amongst partner nations and because U.S. standards are frequently the first on the table (Ferrari, 1995, pp. 33–35; Hartley, 1997, p. 23; Mërtl, 1998, pp. 113–115). The difficulty of engaging in international peacekeeping or exporting weapons to a world market has obliged even nations not formally aligned with the U.S. to adopt U.S. standards. For example, Swedish Gripen fighters are now built to U.S. digital communications standards (Link 16), and even Russia and China have been obliged to develop variants of their major weapons systems to NATO standards for export (Keijsper, 2003).

As a cautionary note, the U.S.'s advantage in developing and fielding new military technologies will not always necessarily translate into commensurate battlefield successes. Because victory or defeat in warfare hinges on factors such as doctrine, force structure, training, and strategy, it is frequently not the first nation to introduce an innovation that reaps the fruit of its capabilities. Thus, although the United Kingdom introduced both the tank and aircraft carrier, Germany became the principal strategic beneficiary of the former invention during World War II, while Japan and the U.S. realized the potential of the latter. In both cases, the key to the successful exploitation of new technologies lay in new force structures (e.g., the combined arms panzer division and the integrated aircraft carrier battle group) and doctrines (e.g., deep armored exploitation into an enemy's rear and the launching of air strikes beyond visual range), rather than the production of new weapons per se.



Moreover, past experience also demonstrates that parochial considerations can lead military organizations to neglect existing low-tech challenges. For example, even though the U.S. pursued the objective of building a 600-ship Navy during the Reagan administration, virtually no resources were dedicated to the mundane task of sweeping naval mines. As a result, the U.S. Navy possessed only three Korean War-era minesweepers in service during the late 1980s and would have, therefore, been incapable of escorting Kuwaiti oil tankers in 1987–88 or conducting operations in the northern Persian Gulf in 1991 had European allies not assisted with their more comprehensive minesweeping capabilities (Craig, 1995, pp. 168–254; DeVore, 2009). In short, despite the U.S.'s advantages in developing and fielding new military technologies, it is in the organizational and conceptual domains of defense budgeting that the U.S.'s armed forces are liable to be strategically surprised.



III. U.S. Arms Export Processes

A. Why the U.S. has a Comparative Advantage

Although the U.S.'s investments in defense R&D favor the precocious fielding of new military technologies, the scale of its procurement spending generates cost advantages for U.S. defense contractors competing in international markets. As with R&D, U.S. spending on the procurement of weapons systems dwarfs that of other nations. The U.S. invests \$140 billion per year on defense procurement. By way of comparison, other great powers spend between one-fifth (China) and one-twentieth (Germany) as much as the U.S. For example, China spends \$26 billion; Russia, \$16 billion; the United Kingdom, \$11 billion; France, \$10 billion; Japan, \$9 billion; and Germany, \$7 billion on defense procurement (Bitzinger, 2011; EDA, 2009).⁴ All 27 members of the European Union collectively spend only \$43 billion, which amounts to less than a third of U.S. procurement expenditures (EDA, 2009). Moreover, a combination of genuine comparative advantages and protectionist laws (the Buy American Act and congressional politics) ensures that a larger proportion of U.S. procurement spending goes to domestic defense industries than is the case in many other nations (Neuman, 2009, p. 72).

In addition to providing the U.S.'s armed forces with the wherewithal to accomplish their missions, this level of procurement spending provides U.S. arms manufacturers with substantial competitive advantages over foreign firms. Two distinct economic phenomena, learning economies and scale economies, explain why high domestic spending sustains international competitiveness. Since the 1950s, research has demonstrated that the ability of a labor force to build complex weapons systems increases with experience (Asher, 1956). This phenomenon of "learning by doing" means that the average cost of a product decreases as the

⁴ The figures for China and Russia include defense R&D expenditures. Those for all other states (including the United States) do not.



cumulative number of units produced increases. Current research suggests that the man-hours needed to produce major weapons systems can decline by 20–25% for each doubling of output. Overall, learning economies have been demonstrated to result in 10% decreases in the production price of weapons over long orders (Hartley & Martin, 1993, pp. 178–179).

Whereas learning economies are a product of cumulative production, economies of scale are a function of production rates. When larger volumes of a weapon are produced, it becomes possible to organize the manufacturing process more efficiently and amortize the fixed overhead of production facilities over more units. Although data on the scale economies of major weapons systems are limited, a British government study argues that a 10% decrease in the unitary cost of a product may be achieved with each doubling of output (NAO, 2001, p. 17). Although there is theoretically a point where increased output ceases to generate economies of scale and may even produce increased per-unit production prices (i.e., diseconomies of scale), the production runs of defense goods are rarely, if ever, large enough to produce this effect (Hale, 1987). As a consequence, it is a general rule that the more units produced, the lower will be the unitary production prices of a defense product.

Together, learning and scale economies promise substantial savings on the unitary costs of weapons. If two nations manufactured identical weapons systems during a certain number of years, yet one nation produced twice as many units as the other, then that nation could theoretically achieve a 20% reduction in unitary production costs. In practice, U.S. production runs are frequently more than twice as large as those of other great powers. For example, although U.S. combat aircraft may be produced at a rate of 12–15 units per month, national British or French programs can at best achieve a monthly cadence of two to five (Hartley & Martin, 1993, pp. 178–79; Hébert, 1995, pp. 76–78). As a result of these larger production runs, U.S. defense corporations can generally sell weapons abroad at cheaper prices than foreign companies marketing equivalent products.



The U.S.'s advantages in competing for export markets pose a major challenge to the viability of other nations' defense-industrial bases. In effect, U.S. defense manufacturers possess cost advantages in international markets because the U.S.'s domestic market is so large. Even though the U.S. is the world's largest arms seller and annually exports nearly \$15 billion (prices in current dollars) in weapons, exports constitute less than 10% of U.S. defense industries' output (SIPRI, 2011). In other words, approximately 90% of U.S.-produced weapons end up in the hands of the U.S.'s armed services. As a consequence, although arms exports are desirable for U.S. corporations and can yield certain benefits even for the nation, they are not essential to the viability of the U.S.'s defense-industrial base. Insofar as the U.S. is highly capable of winning export orders, yet not dependent on doing so, it occupies a virtually unique position in the international market.

Compared with the U.S., most nations depend on arms exports for the maintenance of a defense-industrial base, yet have fewer competitive advantages for achieving them. To compensate for insufficient domestic production runs, many arms-producing nations must export a substantial proportion of the arms they produce in order to achieve adequate economies of scale and avoid the necessity of closing production lines between national orders, which both generates unemployment and results in the loss of vital skills. To take an extreme example, the survival of Israel's defense-industrial base structurally depends on exporting three-quarters of the arms produced in that nation (Hughes, 2003). For other arms producers, the imperative to export is only slightly less onerous. Russia, for example, seeks to export roughly half its total output, and Europe's largest arms producers appear to be aiming to export one-third of their production (Bitzinger, 2003, pp. 53–55; Kalinina & Kozyulin, 2010, 34–39; Interview, Smith, 2010). Given the apparent conundrum of many nations needing to export a large proportion of their defense output for domestic arms production to remain viable, yet being unable to achieve the cost effectiveness of U.S. contractors, certain scholars have argued that the U.S. could acquire a de facto monopoly over the international arms market (Caverley, 2007; Kapstein, 1994).



However, contrary to predictions that the size of the U.S.'s protected domestic market would lead to an international monopoly on the sale of major weapons systems, the U.S. share of the international arms market remains more limited than one might expect. Figure 2 compares the sales of the world's eight largest arms exporters since the end of the Cold War.

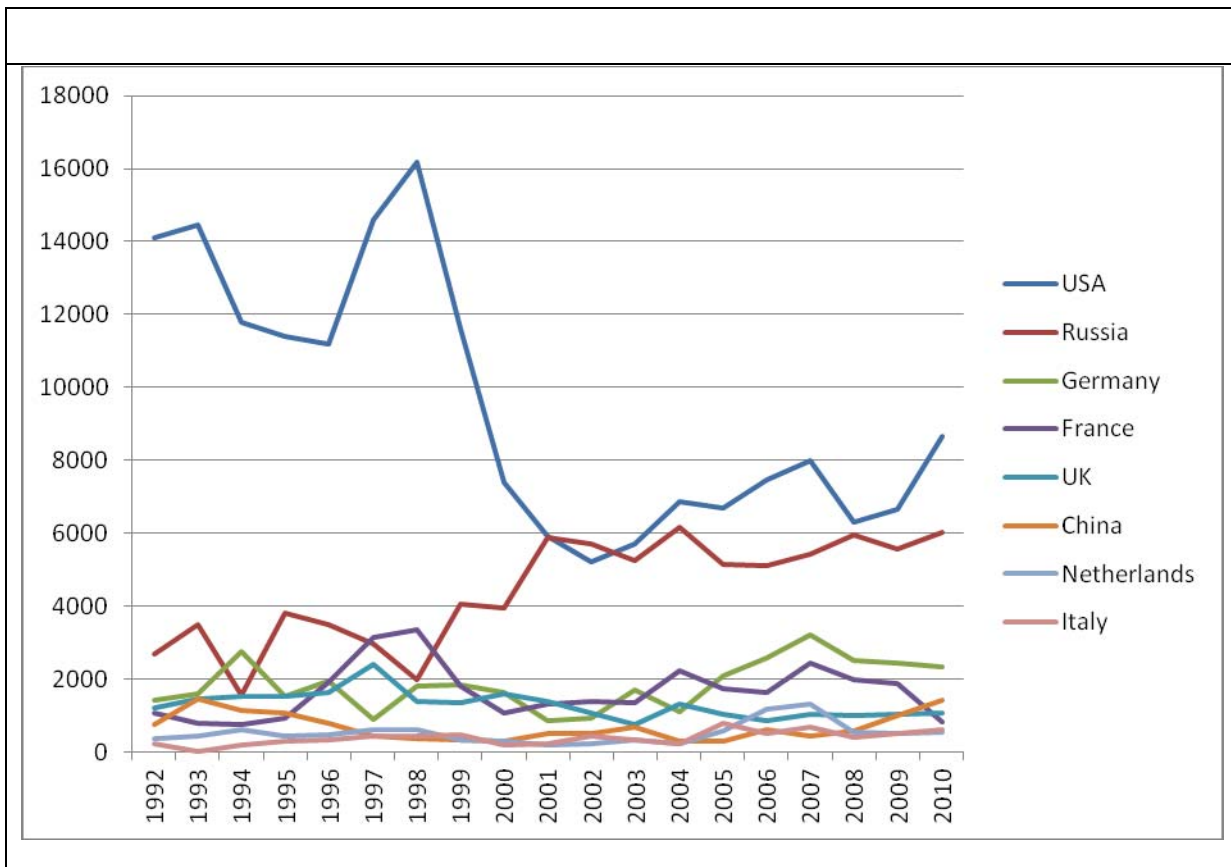


Figure 2. Arms Exports Since the End of the Cold War (Figures in Millions of Constant 1990 Dollars)

Although the U.S. has been the world's largest arms exporter in every year except one (2002), its share of the international market has varied from a high of 58% (1992) and a low of 27% (2008) per annum. Although substantial, such a market share is less than one might expect from a country that invests 10-fold more than any other nation on military R&D and five-fold more on procurement. Conversely, some nations export more weapons than their domestic defense-



industrial investments would predict. To understand why the United States exports the quantity of weapons it does and how its presence shapes international markets, it is necessary to examine the arms export policies and policy-making processes both of the U.S.'s and of other nations.

B. Advantages and Disadvantages of Exporting Armaments

U.S. policy-makers have long been ambivalent as to the merits of exporting armaments. Within this context, certain economic, military, and diplomatic arguments are regularly evoked both for and against arms exports. Table 1 illustrates the factors that usually weigh either for or against a given export agreement.

Table 1. Arguments For and Against Arms Exports

Arguments For Exports	Arguments Against Exports
1) creating jobs and corporate profits	1) compromising sensitive technologies
2) lowering domestic procurement costs	2) fueling arms races
3) keeping assembly lines open	3) strengthening potential adversaries
4) strengthening allies and friends	4) sanctioning nations' behavior/policies
5) promoting interoperability amongst allies and friends	5) producing negative diplomatic consequences

The case for arms exports has economic, military, and foreign policy components. Because the U.S. government has already born the substantial sunk costs needed to develop a weapons system, export orders are a cost-free (for U.S. taxpayers) means of securing a greater degree of profitability for U.S. firms and providing jobs for U.S. workers. Considering the sizeable proportion of the U.S.'s national investment in high technology R&D dedicated to armaments, it would



arguably be economically counterproductive to not vigorously export armaments. Besides being advantageous for the U.S. economy as a whole, arms exports can also improve the ability of the U.S. defense- industrial bases to cost effectively support the armed services.

By expanding production runs, exports can result in lower acquisition costs for the U.S. armed services. Such a dynamic is apparent in the F-16 program; 4,300 aircraft have been procured from the program by 24 countries, and it provides a primary rationale for current efforts to involve large numbers of nations in the F-35 program (Kapstein, 2004; Sorenson, 2009, pp. 130–131). In certain cases, such as the development of the F-16 Block 60 for the United Arab Emirates, foreign clients have born many of the R&D costs of improving and/or upgrading U.S. weapons (Steuer et al., 2011, pp. 19–20). By lengthening production runs, exports can also sustain production lines during periods when a dearth of domestic orders would normally lead to their closure (Kemp, 1994, p. 155). For example, exports have at times kept assembly lines for F-15, F-16, and C-130 aircraft open when DoD contracts would not have. In the recent past, exports have been advanced as a means of keeping the C-17 and F-22 production lines open (Sorenson, 2009, pp. 131–132).

In addition to the economic arguments for arms sales, several political arguments have been made for why selling arms can improve the U.S.'s security and influence. One of the longest standing arguments in favor of arms sales has been a desire to strengthen the U.S.'s friends and allies. In important respects, the arms given, sold, or leased to U.S. allies facilitated the U.S.'s victories during both world wars and the Cold War. Without U.S. military goods, it is uncertain whether the Entente could have repulsed the German spring offensives of 1918; whether the Soviet Red Army would have triumphed on the Eastern Front in 1943; or whether Greece, Turkey, and Iran could have withstood communist pressures during the



early Cold War (Overy, 1995, pp. 180–244; Soutou, 1989).⁵ More recently, a desire to provide U.S. allies with qualitative advantages over their opponents has underscored debates about arms exports to Israel, Saudi Arabia, and Taiwan. Part and parcel to calls to strengthen the U.S.’s friends and allies have been arguments that the U.S. needs to improve its ability to militarily operate alongside potential military partners. Because the U.S.’ largest military interventions have all involved international coalitions, it is evident that interoperability can, at times, be critical to military effectiveness. In principal at least, a liberal arms export policy would enhance military interoperability by ensuring a greater degree of equipment commonality between allies (Wolf & Leebaert, 1978).

Although powerful arguments can be made in favor of arms exports, equally compelling considerations are frequently advanced for a restrictive arms export policy. For a country that invests so much in military innovation, any U.S. arms exports risk placing valuable military technologies in the hands of competitors capable of reverse engineering or otherwise imitating U.S. products. China has reportedly acquired much U.S. military technology through unauthorized re-transfers of U.S. weapons or designs. It allegedly acquired blueprints for Aegis air defense systems from a Japanese officer, an example of the F-16 fighter from variety of U.S. military technologies from Israel (Cheung, 2009, pp. 137–42; Clarke, 1995; Fisher, 2007, p. 145; Hewson, 2008; Sorenson, 2009, p. 134).

Besides potentially compromising U.S. technology, the introduction of new or qualitatively superior weapons into sensitive regions can fuel arms races and create windows of opportunity for aggression. For example, Egypt’s unprecedented

⁵ Paradoxically, the U.S. Expeditionary Force (AEF) of 1918 was largely equipped with weapons bought or borrowed from its European allies. However, the reason for this was not a lack of defense-industrial capacity, but rather the inadequacy of U.S. procurement policies prior to its entry in the war. Since 1915, the United States had exported vast quantities of war material—including European-designed weapons manufactured under license (British Enfield rifles and French Model 1897 artillery pieces), ammunition, explosives, motor vehicles (nearly 3,000 in total), high-quality steel, and gas masks—to the Entente Powers (Porte, 2005, pp. 178–85).



September 1955 arms deal with the Soviet Union (ostensibly Czechoslovakia) prompted Israel to attack in October 1956, before the Egyptian armed forces could assimilate the new weaponry (Kyle, 1991/2011, pp. 62–85). To prevent situations such as this from arising, the U.S. has (imperfectly) followed a policy, enshrined in a presidential directive from 1977, of not being the first nation to export new categories of armaments to a region (Kemp, 1994, p. 154; Le Roy, 2002; Sampson, 1977, pp. 184–185).

Along with concerns that arms exports could destabilize regional balances of power, there is an equal concern that U.S. arms exports might strengthen nations that could become hostile to the U.S. Because there is no guarantee as to how a recipient of U.S. arms will behave in the future, there is always the possibility that U.S. soldiers and seamen could find themselves confronted with U.S. weapons. Such, indeed, occurred after the Iranian Revolution of 1979, when a government hostile to the U.S. inherited the state-of-the-art stockpile of U.S. weapons that had been sold to the previous pro-U.S. regime. Although there is a persistent fear that exported weapons could be used against the U.S., another motivation for not exporting U.S. weapons lies in the desire to not sanction activities or policies that the U.S. disapproves of. For example, the U.S. used arms embargos to (unsuccessfully) deter India and Pakistan from acquiring nuclear weapons in the 1990s and to express displeasure with Turkey's 1974 invasion of Cyprus (Hackett, 1988; Sampson, 1977, pp. 311–312).

A final reason for not exporting certain categories of weapons lies in the negative diplomatic consequences that could result from sales. China is sensitive to the nature of U.S. arms transfers to Taiwan, and Russia is concerned with U.S. exports to nations it considers to lie within its sphere of influence, such as Georgia. Exports of overly sophisticated or offensive armaments to either Taiwan or Georgia could, therefore, exacerbate relations with China and Russia, respectively. Although neither sophisticated nor illegal, the export of weapons such as cluster bombs, depleted uranium munitions, and napalm can tarnish the U.S.'s public image



because humanitarian organizations have made these weapons the object of lengthy negative publicity campaigns. For example, Israel's use of U.S.-made cluster bombs in populous areas during the 2006 Lebanon War generated much adverse publicity for the U.S. (Human Rights Watch, 2008; Migdalovitz, 2008, pp. 31–32). To prevent arms exports that would negatively impact the U.S.' image in the world, Section 502B of the Foreign Assistance Act was enacted in 1974, banning arms sales, except in extraordinary circumstances, to governments that display a "consistent pattern of gross violations of internationally recognized human rights" (Schroeder, 2005, p. 34).

C. U.S. Export Policies and Procedures

Considering that powerful factors militate both for and against U.S. arms exports, determining the merits of any given arms transfer is subject to a process that is both more pluralistic and transparent than those of many of the U.S.'s foreign counterparts. The U.S.' arms export approval process is pluralistic in that it officially involves numerous actors within both the executive and legislative branches of government and unofficially embraces a wide range of interest groups. This process provides procedural mechanisms whereby many diverse perspectives—reflecting military, economic, diplomatic, humanitarian, and parochial interests—weigh in on whether the U.S. will or will not transfer a weapon to another nation. Because of the nature of this decision-making process, the U.S.' arms export process is comparatively restrictive and reflects an ever-changing balance between economic, military, and diplomatic factors (Schroeder, 2005). From the perspective of foreign nations desirous of importing U.S. armaments, the arms export process frequently appears unreliable, unpredictable, and laden with conditions. To better appreciate how this process functions, we examine, first, the role of the executive branch and then of the legislative branch in the arms export process.

The executive branch of the U.S. government plays the crucial gate-keeping role of deciding whether the U.S. government should permit negotiations or reject out of-hand a nation's request for U.S. weaponry. Within this context, two distinct



procedures exist for negotiating an arms deal—the Foreign Military Sales (FMS) program and the Direct Commercial Sales (DCS) process. The FMS and DCS procedures differ substantially: the former is a DoD-administered program and the latter requires the State Department to approve direct commercial negotiations between U.S. firms and foreign nations.

The FMS program was established as a consequence of the Foreign Assistance Act of 1961 and the Arms Export Control Act of 1976. What distinguishes the FMS program from the DCS process is that the former involves government-to-government contracts, administered by the U.S. DoD, rather than contracts between U.S. corporations and foreign nations, as does the DCS process. This means that the U.S. government contracts for FMS weapons from U.S. firms, before transferring the weapons to the foreign client. In principle, FMS contracts are administered on a no-profit, no-loss basis by the DoD.⁶ To this end, a 3.8% fee, levied on contracts, is used to fund a specialized DoD agency, the Defense Security Cooperation Agency (DSCA), which administers the contracts. Because FMS is managed by the DoD, both the armed services and the Office of the Secretary of Defense can exert a direct influence on what equipment is offered for sale and under what conditions (GAO, 1999; Sorenson, 2009, pp. 132–133).

For importing nations, FMS has the advantage that the U.S. DoD undertakes the complex tasks of monitoring a contract guaranteeing the quality of the goods delivered and ensuring that the training and service provisions are adequately fulfilled. For nations with limited administrative capabilities, these FMS services can mean the difference between a nation receiving a real military capability for its investment rather than being overwhelmed by the delivery of goods and services that a nation's armed services are incapable of employing without additional set-up assistance. Despite these advantages, several factors have driven a long-term

⁶ In practice, the DoD might lose money on smaller contracts and profit from larger ones because administrative costs are not necessarily proportional to contract values (GAO, 1999).



decline in the popularity of the FMS program relative to the DCS process. The FMS program's use of cost-based, rather than fixed-price, contracts and the lack of transparency about costs have convinced many nations that they can achieve better value for their money through the DCS process (GAO, 1999, p. 6). Moreover, the fact that the FMS program only deals with equipment built to the same standards as those used by the U.S.'s armed services obliges nations desirous of acquiring customized equipment to do so via DCS (Sorenson, 2009, p. 133).

In contrast to the FMS, the DCS process is administered by the State Department and involves a less proactive governmental role. In DCS cases, a would-be purchaser of U.S. weapons must apply to the Office of Trade Controls at the State Department's Bureau of Political and Military Affairs for permission to begin direct negotiations with contractors. Once permission has been given, a contract's modalities will be negotiated directly between the U.S. firm and its potential foreign client. With the DCS process, unlike the FMS process, the U.S. government applies no surcharge for sales and fixed-price contracts can be employed (GAO, 1999, p. 6). Moreover, if clients wish, they can order customized or modified products through the DCS process that are not being used in the U.S. military services. However, the downside of the DCS process, from a client's perspective, is that it shifts the significant burdens of contract administration and oversight to the purchasing government, rather than that of the U.S. (Sorenson, 2009, pp. 134–135).

Regardless of whether FMS or DCS procedures are employed for a sale, both the State Department and DoD usually have input on an arms sale. Although the DoD manages the FMS, federal law mandates that the State Department must also approve all government-to-government (i.e., FMS) sales. Although not mandated, the State Department frequently consults with the DoD on DCS sales. Formally at least, the State Department refers 30% of DCS requests to other agencies (including the DoD) for review (Schroeder, 2005). Table 2 illustrates the different instances in the State Department and DoD that are involved in arms export decisions.



Table 2. Arms Export Decisions, the DoD, and the State Department

DoD Actors/Agencies	State Department Actors/Agencies
1) the Defense Technology Security Administration 2) the Office of the Secretary of Defense 3) the Joint Chiefs of Staff 4) Combatant Commanders 5) the Defense Security Cooperation Agency	1) the Office of the Legal Advisor for Political-Military Affairs 2) the Under Secretary for Political Affairs 3) the Under Secretary for Arms Control and International Security Affairs 4) the Bureau of Democracy, Human Rights and Labor 5) regional bureaus 6) the Bureau of Legislative Affairs

As already noted, although the State Department must approve all arms exports (FMS and DCS), the DoD must approve FMS sales and is regularly consulted on DCS sales. During certain high-profile sales, other arms of the executive branch, such as the National Security Council, also intervene in the decision-making process (Schroeder, 2005, p. 30).

In principle, it is after the executive branch has approved a sale that the legislative branch can exercise its right to either approve or invalidate a sale. According to the Arms Export Control Act of 1976, the executive branch must notify Congress 30 days before an agreement can be concluded for the provision of defense goods valued at \$14 million or more (\$15 million for NATO members Australia, Japan, and New Zealand). Once such notification is given, Congress has an allotted period of time to debate and, if appropriate, pass a joint resolution blocking the sale. However, even if Congress does not act during the mandatory notification period, it remains free to use its normal legislative tools to block or



modify a sale *at any time* prior to the delivery of the equipment in question (Grimmett, 2010).

Concentrating overmuch on Congress' formal role, specified in the AECA, of legislating against arms sales approved by the executive branch could lead some observers to misconstrue the legislative branch's true influence over arms export decisions, which is both less direct and more pervasive than might first appear to be the case. In fact, Congress' officially mandated tools for shaping arms sales are rather unwieldy. Not once since the AECA's promulgation (1976) has a congressional joint resolution blocked a potential arms sale (Schroeder, 2005, p. 31). Even if passed, such a resolution could, hypothetically, be subject to a presidential veto. In such a case, two-thirds of the members of both the House of Representatives and Senate would be needed to sustain a congressional joint resolution prohibiting an arms transfer. Thus, barring opposition from a strong majority in both the House of Representatives and the Senate, Congress cannot formally prevent an arms sale (Grimmett, 2010, pp. 3–5).

Despite the limitations of its formal policy tools, Congress possesses substantial influence over arms export decisions. Although blocks are never actually implemented, the mere threat that Congress *could* block a sale can pressure the executive branch into either forgoing or modifying sales. Moreover, by opening formal hearings on arms export decisions and, thereby, focusing public scrutiny on the issue, Congress can politicize export decisions that would otherwise be treated administratively. In general, the executive branch is willing to go to considerable lengths to include influential members of Congress in the early stages of a defense export decision in order to avoid having to spend political capital in defense of potentially unpopular export decisions. One way Congress can be engaged prior to the formal notification of a sale is seen in a non-statutory commitment the executive branch undertook in 1976 to provide a classified briefing to the House Foreign Affairs Committee and Senate Foreign Relations Committee. This occurred 20 days prior to the formal notification provided to Congress, as stipulated by the AECA



(Grimmett, 2010). In potentially controversial cases, such as existed in 1976, influential members of Congress and their staff are brought into discussion far earlier (Schroeder, 2005, p. 32). Because the executive branch includes congressional representatives in the arms export decision-making process earlier than federal law demands, divergences between the legislative and executive branches of government are generally resolved by compromise *before* the formal notification process begins.

Besides its ability to either directly influence or overturn the executive branch's arms export decisions, Congress can shape the overall political context with which decisions are made. Through two congressionally funded research centers, the Congressional Research Service (CRS) and the Government Accountability Office (GAO), members of Congress commission studies that can both raise the visibility of arms transfers and provide valuable policy inputs. Within recent years, the CRS has examined arms sales to Pakistan, aircraft sales to South Asia, and possible exports of the F-22 fighter. Meanwhile, the GAO has investigated controls on cruise missiles and on unmanned aerial vehicle and F-35 aircraft technology. In certain instances, Congress can go even further by passing legislation that establishes distinct conditions for sales to particular nations or of particular items. For example, the Pressler amendment to the 1985 Foreign Assistance Act rendered arms exports to Pakistan conditional on the president annually affirming that Pakistan did not possess a nuclear device (Grimmett, 2009). Although the Pressler amendment was clearly designed as a restraint on exports, Congress has repeatedly used legislation to cajole the executive branch into greater sales to Taiwan (Kan, 2002). After surveying the cumulative impact of Congress' diverse tools for shaping arms transfers, Matt Schroeder (2005) concluded, "The levers of influence held by the legislative branch are remarkably effective. The potential downside to this capacity is that well-placed lawmakers who know how to work the system can single-handedly derail major policy initiatives" (p. 33).



The virtue of the U.S. arms export decision-making process is that it includes a plurality of legitimate interests within a (comparatively) transparent process. The executive departments entrusted with the U.S.'s military security and foreign relations can express their points of view. Meanwhile, members of Congress can voice concerns about issues as diverse as protecting defense-industrial jobs in their districts, preventing the transfer of sensitive technologies, and punishing nations for policies of which they disapprove. Interest groups ranging from defense industries to humanitarian groups and lobbies dedicated to certain nations' interests (e.g., pro-Greek, pro-Israel, and pro-Taiwan lobbies) can all weigh in on this process through the lobbying and public relations tools afforded them by U.S. laws. As a result of incorporating so many diverse groups into the arms export decision-making process, the U.S.'s decisions about whether to export a given weapon to a particular nation reflect a complex balance of interests.

D. International Views of the U.S. Arms Export Policy and Processes

Although the U.S. arms export decision-making process may appear balanced from the point of view of both the U.S.'s domestic policies and its foreign relations, the process is all too frequently perceived to be unpredictable, unreliable, and, at times, incompatible with importing nations' desires to be seen as fully sovereign powers. Because of the diverse interests represented and the variegated channels of influence embedded in the U.S.'s decision-making process, there is an unpredictability in U.S. arms exports that confounds nations' ability to rely, in the long term, on acquiring weapons from the U.S. The diverse examples drawn from the experiences of Pakistan, Saudi Arabia, Japan, and the United Kingdom will suffice to illustrate the dilemma that many nations face in deciding whether or not to buy U.S. weapons.

As far back as the 1950s, Pakistan was considered an important partner of the U.S. and could, therefore, import a wide range of U.S. arms. By 1979, however, concerns about Pakistan's nuclear weapons aspirations and the human rights record



of its military regime prompted the U.S. State Department to ban new arms export contracts with Pakistan. Two years later, the new administration of President Ronald Reagan liberalized arms exports to Pakistan to an exceptional degree in order to strengthen that nation as a regional counterweight to the Soviet Union. At this time (1981) the U.S. agreed to sell Pakistan F-16 fighters, which represented, at the time, the technological cutting edge (Kemp, 1994, p. 151). From 1985 onwards, Congress steadily applied pressure on the executive branch, via the Pressler amendment, to link continued arms exports to Pakistan's abandonment of its nuclear program. In 1990, these pressures culminated, under the new administration of George H. W. Bush, in a fresh arms embargo on Pakistan. Most galling for Pakistan, this embargo extended even to products that had already been bought and paid for, including 28 F-16 fighters purchased the preceding year (Grimmett, 2009).

More than a decade later, President George W. Bush lifted the embargo on Pakistan after the September 11, 2001, terrorist attacks on the U.S. As a powerful display of its willingness to sell Pakistan weapons, in 2006 the U.S. negotiated \$3.5 billion in arms export agreements with Pakistan, rendering that country the largest customer of U.S. arms at that time (Grimmett, 2009). Thus, in little more than two decades the U.S. twice embargoed Pakistan and twice lifted its embargos. Throughout this period, Pakistan's government has shown remarkable continuity in its commitment to a nuclear capability and in its connections with extremist groups and problems with democratic governance. From this point of view, changes in the U.S.'s arms export policies towards Pakistan have been driven more by changing perceptions and politics in the U.S. than any actions on Pakistan's part.

Although Pakistan may be a uniquely complex case, even long-standing allies of the U.S. have been subjected to the vagaries of its arms export process. Congress, for example, has repeatedly thwarted efforts by the executive branch to export arms to Saudi Arabia. In 1984–85, the executive branch sought to sell \$2.8 billion worth of F-15 fighters to Saudi Arabia. However, congressional opposition was such that the administration informed the Saudis it could not conclude the deal



(Miller, 1990). The following year, in 1986, Congress threatened to block the sale of 2,400 Sidewinder, Harpoon, and Stinger missiles to Saudi Arabia and, thereby, obliged the executive branch to withdraw all 600 Stinger missiles from the proposed sale. Later, in 1990, congressional opposition to a proposed \$20 billion arms deal with Saudi Arabia prompted the executive branch to settle for a more modest package of \$7 billion worth of armaments (Grimmett, 2010, p. 6). Thus, although Saudi Arabia was able to import a steady flow of arms from the U.S., it was never able to purchase all of the products it most desired. In each of these cases, the executive branch's goals of strengthening a U.S. ally and winning lucrative contracts clashed with congressional fears that Saudi Arabia could use new high technology weapons against Israel.

Even the U.S.'s closest allies are not immune from the unpredictability of the U.S.'s arms export process. Japan's experience with the F-22 fighter is a case in point. Being one of the few clients that could afford the F-22, Japan expressed its interest in acquiring the aircraft quite early. The U.S. Air Force's leaders initially voiced their opposition to *any* F-22 exports for fear of compromising the aircraft's technological edge.⁷ As a result, Congress in 1998 passed a law prohibiting F-22 exports.⁸ However, when it became apparent that the U.S. production run of 183 F-22 aircraft was nearing its end, the Air Force's leadership reversed itself and began *urging* F-22 exports to Japan as a means of keeping the production line open for a hypothetical future U.S. order. Members of Congress representing districts producing the F-22 (e.g., Marietta, GA; Fort Worth, TX; Palmdale, CA) joined in the effort to lift the export ban. However, since 2007 the House of Representatives has refused to authorize the F-22's export (Bolkcom & Chanlett-Avery, 2009). Even the United Kingdom, which enjoys the most privileged access to U.S. weaponry, has

⁷ One factor motivating the Air Force was the apprehension of a Japanese officer who had been transmitting Aegis blueprints (a system which the United States had sold to Japan) to China (Sorenson, 2009, p. 134).

⁸ Specifically, the law prohibits "the use of appropriated funds to approve or license the sale of the F-22 to any foreign government" (Bolkcom & Chanlett-Avery, 2009, p. 1).



occasionally had cause to complain. Although the U.S. has sold the United Kingdom nuclear missiles since the bilateral Nassau agreement of 1962 and the two countries share submarine technology, the U.S.'s hesitancy to communicate classified software codes nearly led the United Kingdom to withdraw from the F-35 project until a "painful" compromise was negotiated (Reinhard, 2006, pp. 84–89; Sorenson, 2009, p. 134).

Frequently, even when the U.S. approves arms exports, it imposes strict conditions on what the purchasing country can do with the products they acquire. In certain cases, conditionality is specific to a product, while in others it applies to a nation. An example of product-specific conditionality is the U.S.'s regulations on Stinger missiles. When the U.S. sells Stinger missiles to any nation, it requires that the purchasing nation physically inventory the missiles on a monthly basis, regularly update the U.S. government on the whereabouts of all its missiles, and accept visits by U.S. inspectors on an annual basis. The U.S. also reserves the right to review the purchasing nation's security procedures to make certain that they conform to U.S. standards (Schroeder, 2005, p. 31). An example of client-specific conditionality can be found in the U.S.'s sale of AMRAAM air-to-air missiles to Taiwan. Although the U.S. agreed to sell Taiwan AMRAAM missiles in 2000, it decreed that the AMRAAMs would not actually be delivered *until* it was proven that China possessed an equivalent air-to-air missile (i.e., the Russian AA-12). Thus, Taiwan was essentially free to purchase missiles that would sit in U.S. warehouses until the U.S. government decided to export them (Kan, 2002, p. 10). No doubt, conditions such as those the U.S. imposed for the sale of Stingers and AMRAAMs constitute severe constraints on the ability of nations to freely use the arms they purchase in pursuit of their own foreign policy objectives.



IV. The U.S.'s Impact on the International Arms Market

A. Foreign Responses to U.S. Export Policies

Because of the restrictive, unpredictable, and conditional inherent in the U.S.'s arms export process, nations are forced to weigh the (generally) superior cost effectiveness of U.S. weaponry against the risks of depending overmuch on the U.S.⁹ Put simply, the trade-off facing nations allied to or enjoying cordial relations with the U.S. is one between procurement *efficiency* and *autonomy* (Moravcsik, 1992). In general, the most efficient policy a nation can adopt would be purchasing those weapons systems providing the greatest value for the money that can be obtained on the world market. However, because a disproportionate number of these weapons would inevitably come from the U.S., a foreign nation would thereby become vulnerable to coercion, manipulation, or punishment at the hands of any U.S. government willing to leverage its position in the arms market for foreign policy ends. Conversely, a nation can obviate the risks of being blackmailed by arms suppliers (notably the U.S.) by pursuing a policy of complete defense-industrial autonomy, which would entail designing and building all of its weapons systems within its sovereign territory. However, such a course of action would be ruinously expensive for the vast majority of nations, which lack the budgetary, scientific, and industrial resources to autonomously produce armaments with any degree of efficiency.

⁹ In certain categories of weapons system, U.S. products face the additional problem of being too costly and sophisticated for the needs of many export clients. Mary Kaldor (1981/1983) has referred to the development of weapons where the marginal cost of additional sophistication is high, and its value low, as "baroque." A good example of U.S. weapons being baroque compared to the needs of many customers lies in warships. In recent years, one of the smallest surface combatants procured by the United States Navy has been the Arleigh Burke-class destroyer, which displaces 8,000–10,000 tons (depending on the model). However, most international demand for surface combatants is concentrated on frigates displacing 3,000–4,000 tons. Therefore, although the Arleigh Burke is a cost-effective weapons system for its size, the smaller frigates produced by Germany and France appear to better suit the needs of many foreign navies (Sadler, 2007; Todd & Lindberg, 1996).



In actual fact, although complete defense-industrial autonomy is virtually unheard of amongst the U.S.'s allies and friends, most of these nations are willing to pay considerable premiums in terms of more expensive weapons systems and forgone military capabilities in order to lessen their degree of defense-industrial dependence on the U.S. Within this context, the autonomy-efficiency trade-off nations face is not one between two opposing policy alternatives, but rather one where a whole range of intermediary courses of action are available to nations. However, the underlying logic is such that each additional increment of defense-industrial autonomy a nation wants to obtain can be bought only at the price of reducing its efficiency in arms procurement (and vice-versa; Moravcsik, 1992, p. 23). Figure 3 illustrates the different efficiency-autonomy trade-offs that exist between the maximum degree of efficiency provided by an economically liberal import policy, and the maximum degree of autonomy provided by the entirely indigenous development of armaments.

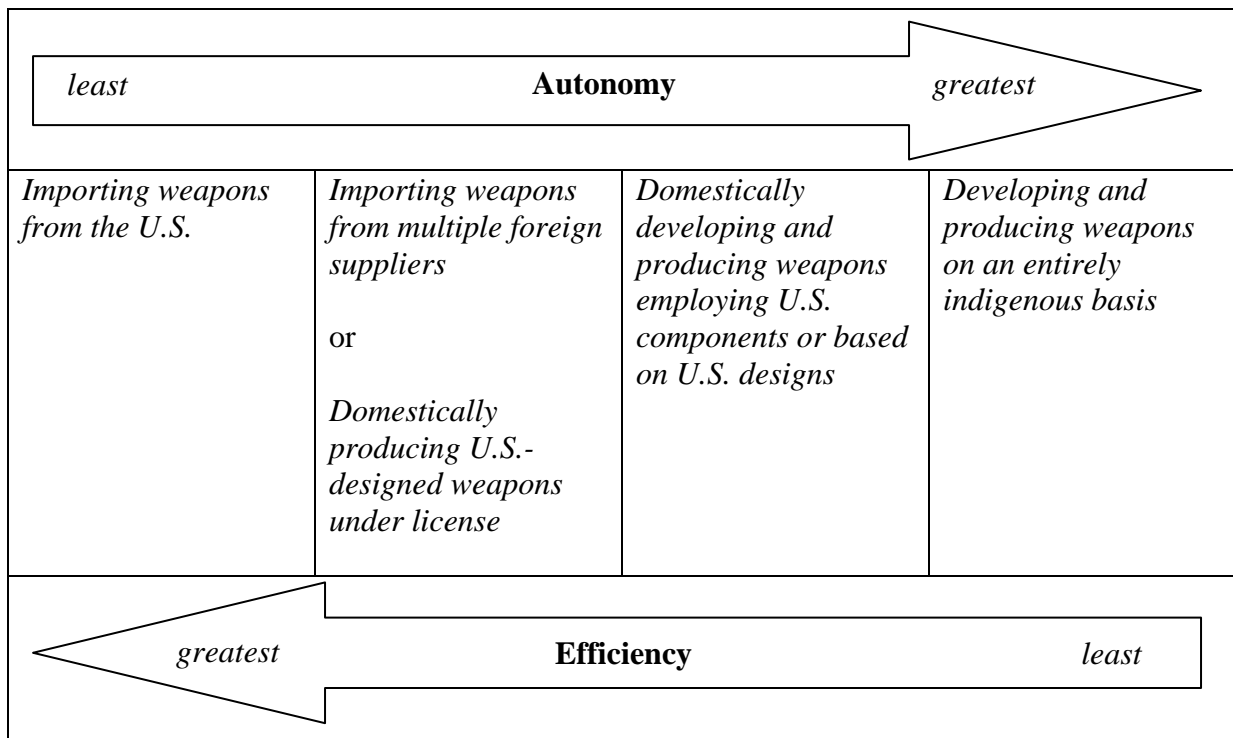


Figure 3. The Autonomy-Efficiency Trade-Off in Arms Procurement



For many nations, the principal means of ensuring against the unpredictability and restrictiveness inherent in U.S. arms exports lies in diversifying the sources from which they procure armaments. Even though U.S. armaments frequently possess cost and performance advantages in comparison to competing products, other arms manufacturers are generally more predictable and less restrictive in their arms export policies.¹⁰ As a consequence, a number of nations have adopted deliberate policies of splitting their major armaments purchases between the U.S. and other contractors. Oftentimes, this involves the purchase of similar products from two or more contractors. For example, both Greece and Taiwan have engaged in nearly simultaneous purchases of comparable U.S. and French fighter aircraft; Pakistan procures many categories of weaponry from both U.S. and Chinese sources; and Saudi Arabia redundantly purchases equipment from U.S., British, and French sources (Carlier, 2002, pp. 243–261; Huertas, 1996, pp. 166–181; Phythian, 2000, pp. 188–258).

Theoretically, procuring weapons from multiple foreign suppliers offers importing nations two major benefits when compared with the alternative of depending exclusively on the U.S.. First, by purchasing a portion of its armaments from suppliers perceived as more reliable than the U.S., a nation can partially guarantee itself against the risk of the U.S. prohibiting future exports of either complete weapons systems or, even worse, spare parts for a nation's existing U.S.-

¹⁰ In terms of restrictiveness, Germany and Japan constitute the two notable exceptions as they both possess arms export legislation that is more restrictive than the United States'. In Germany's case, firms and government officials have developed several subterfuges to circumvent export regulations that normally prohibit lethal arms sales to states that are not members of either the North Atlantic Treaty Organization (NATO) or the European Union (EU). One such subterfuge has been to license foreign companies (frequently in Turkey or the United Kingdom) to manufacture German-designed arms for export (Abel, 2000). Another such subterfuge has been to build unarmed platforms in Germany that are then equipped with weapons systems in another state (Sadler, 2007, pp. 63–94). A third and final means of avoiding stringent export regulations has been European collaboration, whereby Germany's partners are allowed to negotiate export contracts that German firms cannot (Vetter & Vetter, 2009, pp. 169–79). In contrast to Germany, Japan has scrupulously abided by its post-1967 arms export ban. This has proven exceptionally costly as poor scale and learning economies have rendered Japanese-designed weapons amongst the least cost effective in the world (Chinworth, 2000; Samuels, 2007, pp. 143–48).



made weapons. Within this context, Pakistan's ability to weather the U.S.'s arms embargo of the 1990s owes much to the country's having previously maintained China as a "second-source" for most categories of armaments (Medeiros & Gill, 2000). Second, by buying weapons from suppliers considered less restrictive than the U.S., nations can both obtain types of weaponry that the U.S. is unwilling to export and exert pressure on the U.S. government to approve sales that would otherwise go to foreign suppliers. Taiwan is a case in point. After the U.S. proved reluctant to sell it F-16 fighters and AMRAAM missiles in the early 1990s, Taiwan purchased comparable Mirage 2000 fighters and MICA missiles from France. Besides furnishing Taiwan with high technology weaponry the U.S. would not sell, this deal had the added benefit of prompting the U.S. government to revisit its arms export policy towards Taiwan. Because its unwillingness to sell Taiwan F-16s only resulted in French firms winning a \$4-billion contract, the administration of President George H. W. Bush reversed course and offered Taiwan F-16s (Carlier, 2002, pp. 244–251).

Although nations can lessen their vulnerability to a restriction in U.S. arms deliveries by diversifying their sources of supply, such a policy is economically inefficient. For one thing, nations that maintain a second source for most categories of armaments must, by definition, buy large quantities of weapons that they consider suboptimal in terms of either cost or performance. Thus, by purchasing French Mirage 2000 fighters as a hedge against restrictions to their access to U.S. F-16s, Greece and Taiwan both ended up paying up to a third more per unit for aircraft whose radars and electronics lagged behind their U.S. counterparts (Carlier, 2002; List, 2005; Simon, 1997, pp. 63, 243–244). Pakistan has, generally, been even less satisfied with the performance, reliability, and financial conditions attached to its purchases of Chinese armaments (Medeiros & Gill, 2000, pp. 9–10). Even when the second source for weapons is nearly as cost effective as the primary source, diversification is costly because of the greater administrative and logistical complexity it entails. For example, when nations acquire weapons systems from two suppliers rather than one, they must arrange for personnel to be trained to operate



and maintain two dissimilar systems and also to interface with two distinct foreign supply systems for spare parts. Such duplication in administrative tasks inevitably results in higher overhead costs and/or lower levels of operational readiness (Huertas, 1996, p. 168)

Because of the shortcomings of diversification, manufacturing U.S.-designed weapons under license provides nations that possess adequate industrial bases with an appealing means of achieving a degree of defense-industrial autonomy while also retaining the advantages, provided by imports, of procuring high technology weapons developed and tested as part of the U.S.'s unrivaled defense R&D effort. As demonstrated by the arms embargoes against apartheid South Africa and Serbia, nations that manufacture weapons under license can exhibit a much greater degree of resiliency when their former arms suppliers abruptly halt future shipments than nations that directly import weapons (Collet, 1993, pp. 98–99; Huertas, 1996, pp. 131–132). Moreover, for nations that already possess sizeable defense industries, licensed production can offer employment for factories that would otherwise be closed (Braddon, 1995; Rich, Stanley, Birkler, & Vaiana, 1984). For all of these reasons, many nations have favored manufacturing U.S. designs under license as an optimal defense-industrial strategy. As a consequence, foreign nations have, over time, produced under license a wide array of U.S. weapons, including Aegis-equipped destroyers, M1 tanks, and a veritable litany of iconic U.S. fighter aircraft, including the F-86 Saber, F-104 Starfighter, F-4 Phantom II, F-15 Eagle, and F-16 Falcon.

However, despite its allure, manufacturing U.S. weapons under license has major drawbacks. For one thing, by establishing a separate production line, rather than buying weapons directly off U.S. production lines, nations fail to benefit from the learning and scale economies that the U.S. generates as a result of its exceptionally large production runs. For example, the decision by six European nations to manufacture F-16 aircraft under license, rather than buy them directly from the U.S. manufacturer (General Dynamics), resulted in them paying 34% more per aircraft



than would have otherwise been the case (Rich et al., 1984, pp. 9–10). In other instances, the cost penalties of licensed manufacturing are substantially greater. It is generally estimated that Japan regularly pays twice as much per unit for the U.S.-designed weapons (e.g., F-15 fighters, P-3C anti-submarine aircraft, Patriot missiles, and Aegis destroyers) it manufacturers under license than would be the case with direct imports (Chinworth, 2000, pp. 382–384). Even South Korea, which has the advantage of a highly qualified and comparatively lower cost workforce, pays cost penalties of at least 20% for licensed production (Bitzinger & Kim, 2005, pp. 192–193). Thus, by opting to manufacture arms under license, nations give up one of the major benefits of acquiring U.S. weaponry, superior cost effectiveness, that is a product of the U.S.’s long production runs and high volumes of production.

Although licensed production forgoes certain of the economic advantages of procuring armaments from the U.S., it also fails to provide licensees with a high degree of defense-industrial independence. Although licensed manufacturing transfers the know-how to build products, it rarely transfers the tacit knowledge required to design or modify high technology weaponry. Moreover, since the 1970s, the U.S.’s policy of restricting technology transfers has further limited the benefits licensed production confers on licensees. In general, the U.S. “black-boxes” sensitive components (i.e., supplies them only as end items from U.S. contractors) when it agrees to the licensed production of weaponry.¹¹ For example, when it licenses combat aircraft designs, the U.S. systematically restricts the ability of licensees to master hot-section technologies for jet engines, electronic warfare suites, and certain software codes (Bitzinger & Kim, 2005, p. 192; Lorell, 1995, pp. 77–79). Therefore, nations that produce U.S. weapons under license remain dependent on the delivery of components from the U.S. and face substantial

¹¹ The evolution of the United States’ policy towards licensed production can be observed in the changing degree of U.S. content in weapons manufactured under license in Japan. The 1960s license for production of the F-4 Phantom II permitted the Japanese to produce 90% of the aircraft’s content. Later deals, concluded in the 1970s and 1980s, reduced Japan’s share of weapons produced under license to 70% for the F-15 and 60% for Patriot missiles (Chinworth, 1992).



shortfalls in their defense-industrial capabilities should they attempt to progress to the autonomous design *and* production of weapons systems.

The shortcomings of licensed production have led many of the U.S.'s friends and allies to pursue a greater degree of defense-industrial autonomy via the development and production of weapons combining substantial U.S. technical inputs with a greater degree of indigenous design activity. The attraction of developing indigenous weapons with significant U.S. inputs is that it permits nations to maintain skilled design teams, develop systems integration skills, and accrue experience in the management of complex programs. Since these defense-industrial skills are considered to be the most strategically important and also those that involve the greatest economic value add, many nations are willing to go to significant lengths to develop and/or preserve them. In principle, a policy of developing indigenous weapons based on U.S. technologies should permit nations to achieve a greater degree of defense-industrial autonomy than is permitted by licensed production, while incurring a fraction of the R&D costs necessary for the development of a wholly indigenous weapon.

To consider, for example, just the domain of combat aircraft, Japan's F-2 fighter, South Korea's T-50 training/strike aircraft, Taiwan's F-CK-1 fighter, and Sweden's Gripen fighter are all present-day examples of this phenomenon. In the first three cases, Asian nations' "national-champion" firms forged partnerships with U.S. prime contractors to develop aircraft for their domestic markets (Bitzinger, 2011, pp. 441–442; Lorell, 1995; Steuer et al., 2011, pp. 95–98). Japanese and South Korean aircraft, for which information is available, involved U.S. partners and sub-contractors contributing approximately 40% of the aircraft's components (as measured by value; Bitzinger, 2011; Chinworth, 2000, p. 386). In Sweden's case, the nation's national champion, SAAB, acted as the Gripen's sole prime contractor and systems integrator, but purchased many of the aircraft's sophisticated sub-systems from the U.S. (as well as the United Kingdom and France; Andersson, 1989, pp. 54–55; Keijsper, 2003, pp. 34–43). In certain respects, all of these



projects *can* be qualified as successes because nations succeeded at domestically developing weapons systems that would normally have been technically and financially beyond their reach.

Nonetheless, the development of indigenous weapons systems based on U.S. technology has proven both significantly more costly than mere licensed production and much less valuable from a defense-industrial perspective than building completely indigenous weapons systems. Because projects based on U.S. technology involve designing new weapons systems, nations must bear the economic burdens and technical risks inherent in defense-industrial R&D. However, because the U.S. government reserves the right to prohibit the export of products based on its technology, it is difficult for these nations to utilize arms exports to amortize their R&D expenditures adequately over longer production runs. As a consequence, the indigenous production of armaments based on U.S. technology frequently results in weapons whose per unit program costs markedly exceed those of either direct imports or licensed production. For example, Japan's F-2 fighter, which is based on the U.S.'s F-16, reportedly provides only marginally better performance than its cheaper U.S. counterpart and costs Japanese taxpayers three times more per unit than if Japan had bought the latest models of F-16s directly from U.S. production lines (Chinworth, 2000; Steuer et al., 2011, p. 98).

B. Independent Arms Producers Struggle to Survive

Because of the disadvantages inherent in designing weapons based on U.S. technological inputs, many nations consider it necessary to design and produce weapons systems on an entirely indigenous basis. The principle advantage of developing weapons indigenously lies in the superior degree of defense-industrial autonomy it confers. A nation that is self-sufficient when it comes to the production of modern weaponry is (1) not subject to the shifting policies of arms exporters, (2) comparatively immune to arms embargos, and (3) capable of exporting its wares to whomever it pleases (Krause, 1992). Because of these perceived benefits, the indigenous production of armaments remains a goal cherished by many nations. It



receives additional support in certain nations because of the “techno-nationalist” identities held by their political elites and populations alike (Samuels, 1994). As a consequence, in addition to China and Russia, which cannot reliably import U.S. weapons, nations as diverse as France, India, Israel, Italy, and the United Kingdom strive to develop and produce at least some entirely indigenous weapons systems.

However, despite its advantages in terms of defense-industrial autonomy, the development and production of indigenous weapons systems is a challenging and costly process. Unlike other policies, developing weapons indigenously obliges nations to bear all of the considerable R&D costs and risks involved in high technology projects. In many instances, governments that embark on this course of action ultimately discover, to their chagrin, that they have overreached in attempting to develop weapons whose complexity exceeds their available supply of highly educated human capital and the capabilities of existing national R&D institutions. India is a case in point. Having launched a number of armaments projects in the 1980s and 1990s, India’s ambitious effort to develop major weapons systems proved premature. Although India’s much-vaunted Tejas fighter is already 12 years behind schedule and has already consumed an R&D budget two times larger than originally anticipated, the Arjun tank has not yet entered service more than three decades after the project began (Bitzinger, 2011, pp. 435–438; Gupta, 1990).

Even when nations *can* indigenously develop weapons systems, the financial effort required to do so exceeds what is needed to produce weapons under license or even develop them based on U.S. technology. For example, France’s indigenous development of the Rafale fighter and the exclusively French sub-systems comprising it required an R&D budget four times larger than Sweden needed to develop the comparable Gripen fighter, which incorporates many sub-systems purchased from the U.S. and other foreign suppliers (Hartley, 2001). The high R&D costs that governments must invest to indigenously develop and produce weapons renders it imperative that they produce sufficient quantities of the final product to amortize projects’ high sunk costs. Invariably, because foreign arms producers lack



internal defense markets comparable to those in the U.S., they can attain adequate production runs only by exporting a disproportionately large share of the arms they produce.

However, the basic economics of arms production renders it difficult for foreign arms producers to achieve the volumes of arms exports needed to sustain their indigenous development and production. Although the inadequate size of these nations' domestic markets necessitates their exporting a disproportionately large share of the arms they produce, the larger size of the U.S.'s domestic market ensures that U.S. arms producers enjoy competitive advantages in terms of the quality and price of their equipment. As a consequence, under *ceteris paribus* conditions, U.S. arms producers can usually offer weapons that are more innovative and cost effective than the competition's.

Therefore, the question must be posed as to how certain foreign arms producers succeed at exporting a higher percentage of the arms they produce despite laboring under competitive disadvantages in terms of the quality and cost effectiveness of the products they can offer? The answers to this question lie in governmental policies of (1) catering to markets where U.S. products are either unavailable or politically unwanted, (2) going to greater lengths to meet the military requirements and delivery schedules of export clients, (3) providing various indirect subsidies for arms exports, and (4) providing more advantageous options for clients to finance their purchases.

One of the principal reasons for the comparative success of certain arms exporters lies in the restrictiveness of the U.S.'s own export procedures. At present, the U.S. State Department explicitly prohibits lethal arms exports to 23 nations for humanitarian or political reasons, and the government regularly denies specific requests from many more. This group of nations, which includes China, Cuba, Iran, Libya, Myanmar, Syria, and Venezuela, amongst others, comprises a sizeable arms export market for which U.S. arms producers cannot compete (Department of State, 2011) Ultimately, the U.S.'s unwillingness to export armaments to these nations



provides other arms producers with a precious opportunity to sell their goods abroad. For example, a close examination of sales by the world's second largest arms exporter, Russia, reveals that the bulk of its business has been conducted with nations that cannot import U.S. (and, in many cases, European) weapons (Kalinina & Kozyulin, 2010, pp. 33–34). Although its export volumes are more modest, China's burgeoning role in the arms trade is likewise based on the U.S.'s unwillingness to export weapons to nations such as Iran, Myanmar, North Korea, Sri Lanka, Sudan, and Zimbabwe (Boutin, 2009; Medeiros & Gill, 2000; Michel & Beuret, 2008, pp. 221–235). Israel, which is perhaps the world's most export-dependent arms producer, has also partly built its success on sales to nations that the U.S. has blacklisted (e.g., Angola, China, Congo/Zaire, Ivory Coast, and Sri Lanka; Berghezan & Richard, 2002; Clarke, 1995; Hofnung, 2006, pp. 88–89; Reyntjens, 2009, p. 211).

Even when the U.S. does not categorically ban nations from importing U.S. arms, its perceived unreliability as an arms exporter has provided other arms producers with valuable commercial opportunities. Such is particularly the case when arms importers adopt a policy of limiting their dependence on the U.S. by acquiring weapons systems from multiple foreign suppliers. In this fashion, the decisions of Greece, Saudi Arabia, Taiwan, and Pakistan to supplement their purchases of U.S. weapons by buying equivalent equipment from other suppliers has provided otherwise unattainable commercial opportunities for the British, French, and Chinese producers fortunate enough to become the “second source” for the categories of arms in question (Carlier, 2002, pp. 243–26; Phythian, 2000, pp. 188–258).

Although the U.S.'s self-imposed restrictions on arms exports are one of the reasons other producers can export disproportionately large shares of the arms they manufacture, another lies in the greater lengths that other arms producers will go in satisfying the military requirements and delivery schedules of export clients. U.S. weapons are built to meet the exacting specifications of the U.S.'s armed forces and



enough weapons must be produced to meet U.S. military demands before foreign clients can expect the delivery of weapons produced in the U.S. Because of the primacy accorded to the technical and delivery needs of the U.S.'s armed forces, would-be customers frequently discover that U.S. products are either too specialized for their needs or cannot be delivered when clients desire. One of the reasons for this phenomenon is that most major arms importers cannot afford or maintain the entire panoply of specialized equipment deployed by the U.S. and other great powers, but need simpler multi-purpose weaponry (Kaldor, 1983). As a consequence, lightweight fighters, multi-purpose frigates, and simple armored personnel carriers tend to sell better in international markets than stealthy strike aircraft, anti-air warfare (AAW) destroyers, and infantry fighting vehicles.

Although the U.S. can afford *not* to take export markets into consideration when procuring equipment for its armed forces, other arms producers do not have the luxury of behaving in a similar manner. For example, since the British government's adoption of the recommendations contained in the so-called Stokes Report of 1965, the United Kingdom's official policy has been to develop arms with the demands of export markets in mind and to satisfy foreign clients' delivery timetables by diverting arms, if necessary, from Britain's armed forces (Phythian, 2000, pp. 58–69). Although France has never officially announced a policy equivalent to the United Kingdom's, an examination of its activities reveals that its government relies on similar principles to boost arms sales. For example, not only have export possibilities repeatedly shaped the specifications of the weapons France procures, but the nation also provides special subsidies (estimated at \$22 million to \$26 million [current monetary values] per annum in 1998) for French defense industries to develop or adapt products destined *exclusively* for export (Hébert, 1998; Kolodziej, 1987; Sandler & Hartley, 1995, pp. 251–253). When the rapid delivery of equipment has proven crucial to the signing of export contracts, France's government has not hesitated to supply clients with equipment originally destined for France's armed forces. The most blatant example of this phenomenon



occurred in 1983 when it diverted 10% of the French Navy's inventory of Super Etendard attack aircraft to Iraq (Hébert, 1998, p. 73).

In addition to going to great lengths to meet the military requirements and delivery schedules of export clients, many arms-producing nations also provide a range of indirect subsidies to aid their industries in the struggle for export markets. One form of export subsidy lies in the administration of government-to-government sales. Whereas the U.S.'s Foreign Military Sales (FMS) program operates on a no-profit, no-loss basis and charges foreign clients 3.8% of a contract's value to administer the sale, both the United Kingdom and France operate equivalent programs (run respectively by Britain's Defence Exports Sales Organisation [DESO] and France's General Delegation for Armament [DGA]) that *do not* charge customers for their services. As a consequence, British and French taxpayers ultimately pay for their governments to administer foreign arms sales (Hartley, 2000, p. 449; Hébert, 1998, pp. 40–41).

In addition to subsidizing the administration of sales, governments in countries with nation-owned defense industries can also boost arms exports by permitting public corporations to sell weapons at a financial loss. France, for example, has sold South Africa Puma helicopters and the United Arab Emirates Leclerc tanks at a net economic loss (Hébert, 1998, 72–73). Although the precise magnitude of indirect arms export subsidies has never been precisely calculated, estimates for nations such as France and the United Kingdom plausibly range in hundreds of millions of dollars per annum (Hébert, 1998, 35–42; Martin, 1999, 34–35).

One particularly important form of subsidy that arms producers employ to encourage exports lies in the mechanisms whereby arms sales are financed. Major weapons purchases represent large and long-term investments on the part of nations. Within this context, many nations, especially developing ones, cannot afford to pay for weapons upon delivery and require financing to spread payments over the life span of the equipment they intend to purchase. As a result, these



nations attach equal weight to the availability and quality of the credit they are offered, as they do to the price and performance of weapons, in deciding which arms to import. When an arms producer cannot offer adequate financing options, its products are generally excluded from competitions, regardless of their technical merits (Johnson, 1994).

In many instances, commercial banks are unwilling to offer the unsecured loans for weapons purchases that clients demand. The reasons for banks' uneasiness with these types of financial transactions are easy to understand. Many large arms purchasers have historically been nations where a high degree of political instability coincides with the precarious management of nation finances (e.g., Argentina, Indonesia, Iran, Iraq, Nigeria, Libya, and Pakistan). As a result, the risk of arms purchasers defaulting on their loans is comparatively high. To make matters worse, banks and other commercial lending institutions fear the potential negative publicity that could result from financing arms purchases to repressive or expansionist governments (Johnson, 1994).

To compensate for commercial banks' hesitancy to provide credit for arms exports, many arms exporters offer financing through official (i.e., nation-managed and/or insured) credit institutions that either provide loans directly or guarantee commercial loans extended to would-be arms purchasers. Britain's Export Credits Guarantee Department (ECGD), France's Compagnie Française d'Assurance pour le Commerce Extérieur (COFACE) and the German HERMES Kreditversicherungs AG all serve such a role in providing financing for arms exports (Hébert, 1998, pp. 37–39; Johnson, 1994; Phythian, 2000, pp. 77–79). Although the U.S.'s Export-Import Bank plays a similar role as do non-military exports, it has not provided financing for arms exports to developing countries since 1968, and has not offered credit for exports to developed countries since 1974 (Johnson, 1994, p. 114).

The absence of an official credit institution willing to provide financing for arms exports places U.S. defense industries at a competitive disadvantage against foreign rivals when it comes to winning contracts with many developing countries.



On the other hand, other arms-producing nations have exploited their ability to provide export financing to win orders in the face of more cost-effective U.S. products. For example, France won the following contracts: a large helicopter contract with India because it provided an exceptionally low interest rate (2.5%) over an extremely long repayment period (28 years); a helicopter deal with Brazil based on its offer of export credit worth 185% of the contract's value; and a naval deal with Saudi Arabia because of its willingness to accept a down payment representing only 0.5% of the contracts' value (rather than the customary 15%; Hébert, 1998, pp. 52–53).

However, although effective at stimulating exports, governments' practice of extending loans or loan guarantees to arms importers has proven costly for taxpayers in nations that employ this practice. The arms-sales financing activities of both France's COFACE and Britain's ECGD have consistently generated annual deficits measured in the tens or hundreds of millions of dollars (Hébert, 1998, pp. 37–39; Phythian, 2000, pp. 77–79). During the 1990s alone, British taxpayers were obliged to cover loan defaults on defense exports of £253 million to Jordan; £98 million to Algeria; £46 million to Egypt; £16 million to Kenya; and £11 million to Indonesia (Phythian, 2000, pp. 78–79).

In sum, although it is possible for certain nations to maintain a high degree of defense-industrial autonomy through large-scale arms exports, such policies impose heavy direct and indirect costs on the nations that pursue them. In order to export a sizeable proportion of the armaments they produce, nations must subordinate their own military requirements to the dictates of export markets; be willing to export weapons without political strings attached to virtually any nation capable of paying for them; and provide a variety of (direct and indirect) subsidies for the export of weaponry. Even when nations are prepared to take all of the above steps, reliance on a high volume of arms exports exposes nations' defense-industrial bases to the risk that sufficient contracts simply might not be won in the face of stiff international (frequently U.S.) competition. As a consequence of the costs and risks of



maintaining an export-based defense-industrial base, a number of once-significant arms producers, such as Brazil and South Africa, have largely abandoned the indigenous development and production of major weapons systems (Bitzinger, 2003; Conca, 1998). Certain analysts have even raised questions about the sustainability of the export-based defense-industrial model for nations such as Russia and France (Fontanela & Hébert, 1997; Kalinina & Kozyulin, 2010).

C. The Influence of the U.S. Within the International Arms Market

Through its decisions about what weapons to develop and whom to export them to, the U.S. government plays a crucial role in structuring both the international arms market and the defense-industrial policies of other nations. The reason for the U.S.'s overseas defense-industrial impact lies in its unrivaled domestic expenditures on defense R&D and procurement, which enables U.S. arms manufactures to offer new technologies for export earlier and more cost effectively than other suppliers. However, although the U.S. is the world's largest arms exporter and accounts for 27–58% of the world market, its market share understates its true impact on the international arms market and defense industries worldwide.

Unlike most other nations, the U.S.'s arms export decision-making process frequently denies, for humanitarian or political reasons, sales to nations capable of paying the full cost of weapons. Because the U.S. is perceived as a restrictive and unreliable exporter, other nations are frequently willing to sacrifice much in terms of the economic efficiency of their procurement activities in order to achieve a greater degree of autonomy from U.S. imports. Diversified purchasing, manufacturing U.S. weapons under license, and domestically developing weapons based on U.S. technology are all common, yet costly, responses to U.S. arms export policies. Since the latter two policies involve substantial U.S. inputs, which are not generally included in arms export statistics, the U.S.'s true share of the international production of armaments is far greater than export statistics suggest.



Ultimately, the fact that U.S. products possess decisive advantages in terms of cost and performance renders the path difficult for those nations that attempt to leverage arms exports as a means of sustaining autonomous defense-industrial bases. In general, only through comparatively unrestrained arms exports and a range of indirect export subsidies can most nations achieve the sales volumes needed to sustain the indigenous development and production of major weapons systems. However, although necessary, such policies cannot guarantee the success of an export-driven domestic defense-industrial base. Relying on exports to achieve adequate production runs is intrinsically risky because it involves achieving a volume of sales that is both large and predictable in a market that is highly competitive and where demand is extremely volatile.



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V. International Comparison of U.S. Defense Budgets and Acquisition Policies: Arms Races and Burden-Sharing

Although nations defense budgets are established through domestic political and administrative processes, a variety of interactions can occur between different nations budgeting decisions. In fact, there are powerful reasons why similar trends should be observable in all great powers defense budgeting decisions. Because governments develop military forces in response to capabilities possessed by potentially hostile nations and allies collaborate in meeting threats to their mutual security, an increase (or decrease) in the defense expenditures of one great power might logically trigger a response from rivals and allies alike.

This section of the report examines the extent to which such dynamics can be observed in the present international environment and whether U.S. defense budgets can plausibly be characterized as either responses to or drivers for other nations' decisions about the proportion of their national resources that should be dedicated to defense. Within this context, two particular types of interactions between nations' defense budgets—arms races and burden-sharing amongst allies—are examined. After demonstrating that the evolution of U.S. defense budgets has been largely unconnected to those of its allies and rivals, this section discusses plausible explanations—differing threat perceptions, allied free riding, and domestic politics—for the absence of greater interactions between nations' defense budgeting decisions.

Historically, one of the most common forms of interaction between different nations' defense budgets has been so-called “arms races.” Arms racing can best be conceptualized by an action-reaction dynamic wherein the decision of one nation to invest more on its armed forces will trigger an equivalent response from other nations (Buzan & Herring, 1998, pp. 75–100; Richardson, 1960). In theory, arms races can occur even when nations do not harbor hostile intentions towards one



another. Such is the case because of the dynamic known as the “security dilemma,” whereby one nation’s efforts to strengthen itself defensively relative to perceived threats makes other nations feel less secure. The tendency for even defensive military investments on one nation’s part to alarm others can be explained by the difficulty of distinguishing between offensive and defensive military preparations, and the impossibility of knowing another nation’s future behavior. As a consequence, a nation will likely respond to another nation’s defensive military preparations by investing more in its own armed forces, which can result in the first nation feeling more threatened than was initially the case (Jervis, 1978; Schelling, 1966).

Scholars have identified several historic arms races that closely correspond to this action-reaction model. Amongst the oft-cited examples are the pre-World War I Anglo-German naval competition, the Cold War arms race between the Soviet Union and the U.S., and the Arab-Israeli arms race prior to the 1978 Camp David Accords (Freedman, 2003; Friedman, 2000; Weir, 1992;). In each case, nations’ defense budgeting decisions, weapons acquisitions, and force structures were driven by rival nations’ actual and anticipated actions. In principle, it is even possible for asymmetric or “offense-defense” arms races to occur in which one nation attempts to establish a plausible offensive option against an opponent, who responds by striving to maintain a credible defensive posture (Wolfson, 1968). Both the strategic relationship between neutral Scandinavian nations (Finland and Sweden) and the Soviet Union during the Cold War and the hypothetical competition between one nation’s ballistic missile defenses and another’s nuclear deterrent forces are examples of this phenomenon (Roberts, 1976; Yanarella, 2002). Because arms races are frequently asymmetric, the best evidence that an arms race is in progress lies in the similarity of two nations’ defense budgeting trends (i.e., whether their budgets rise and fall at approximately the same time), rather than similar absolute levels of expenditure (Wolfson, 1968).

Since the end of the Cold War, speculation and official statements, particularly the U.S.’s 2002 National Security Strategy (Office of the President, 2002)



and the 2008 National Military Strategy (Department of Defense, 2008), alike have focused on China, Russia, and, to a lesser degree, India as potential participants in and/or instigators of arms races with the U.S.. If such is the case, then these nations' decisions about what proportion of national resources to spend on defense should correlate closely with defense budgeting trends in the U.S., which would suggest that there is a cause-effect relationship between each party's defense budgeting decisions.

Although arms racing is one way the U.S.'s defense budgeting decisions might be linked to those of other nations, alliance burden-sharing is another. Military alliances, whereby nations combine forces to further their mutual security, date back to the earliest chronicles of international relations (e.g., the Amarna letters, Homer's Iliad and Herodotus; David, 2000). Because alliances aim to supply a collective good shared by all members—security—their proper functioning depends on agreements to share the burden of providing for a common defense. Both the Franco-Russian defense consultations resulting from these nations' 1893 bilateral alliance and the North Atlantic Treaty Organization's (NATO's) activities during the Cold War resulted in tangible examples of burden-sharing amongst allies. In the latter case, individual nations' commitments to provide specific numbers of army divisions and air wings, and, after the 1978 North Atlantic Council (NAC) meeting, the agreement of all member nations to implement a 3% increase in defense spending constitute notable instances of NATO burden-sharing (Sandler, 1987).

At present, the U.S. stands at the center of an unprecedentedly broad and complex network of alliances. Within this context, the U.S.'s alliances in Europe and Asia are particularly important because they tie the U.S. to many of the world's other great powers and are best situated for containing potentially revisionist nations. In Europe, NATO remains the lynchpin of an alliance structure that the U.S. helped pioneer and has lead since 1949. Remarkable for both its duration and degree of institutionalization, NATO today counts 28 member nations, including all of Europe's militarily significant nations (e.g., France, Germany, Italy, Poland, Spain, Turkey, and



the United Kingdom), with the sole exception of Russia. Compared with other alliances, NATO possesses sophisticated institutions for promoting burden-sharing, including regular NAC meetings, a collectively financed NATO infrastructure program, and, most importantly, an annual review process that subjects each member's defense program to the scrutiny and criticism of its allies and NATO's international staff (Sandler & Hartley, 1999, 24–41).

Although the U.S. does not possess an overarching alliance organization equivalent to NATO for Asia, it nonetheless has long maintained alliances with many of the region's key nations. Within this context, the U.S.'s security relationships with Australia, Japan, and the Philippines date back to 1951; with South Korea, to 1953; with Thailand, to 1954; and with Taiwan (in its present form), to 1979. If the U.S.'s European and Asian allies share its threat perceptions and are actively sharing the burden of providing collective security, then these nations' defense budgeting decisions should mirror those of the U.S.

The following section examines defense expenditures in the U.S., first compared to those in Europe and then compared to those in Asia, to ascertain whether U.S. defense budgeting and acquisition decisions can be linked to arms races and/or burden-sharing in either of these regions.



VI. U.S. European Defense Budgets and Acquisition Policy/Status

Throughout the second half of the 20th century, Europe became the focus of the U.S.'s longest and most intense peacetime security commitment ever. In effect, through the creation of NATO, the U.S. assumed the military leadership of a coalition of Western European nations dedicated to containing the Soviet Union. Compared to alliances preceding it, NATO achieved an unprecedented degree of political and military integration, which has contributed to the alliance's remarkable longevity. As a consequence, this transatlantic alliance enabled the U.S., Western Europe, and Canada to achieve a reasonable level of security relative to the Warsaw Pact at a political and economic cost that was acceptable to modern democratic nations (Kaplan, 1999). Because of Europe's past centrality to U.S. security, as both a source of committed allies and significant threats, many observers expect Europe to continue to be the region where arms races with rivals and burden-sharing amongst allies will be most common.

In terms of arms races, certain journalists and policy analysts alike have recently highlighted Russia's authoritarian political system, willingness to use force, and conflicting interests with the West as proof that a new cold war is in the offing (Brzezinski, 2007; Lucas, 2008; McLaughlin & Mock, 2009). To make matters worse, Russia's leaders have repeatedly threatened that a new arms race or cold war would ensue if NATO did not acquiesce to Russia's policies in the Caucasus or accommodate it in terms of ballistic missile defense (Blomfield & McElroy, 2008; Harding, 2007). Given a combination of this posturing and Russia's suspension since 2007 of its participation in the Conventional Forces in Europe (CFE) Treaty, it is natural to examine both whether Russia's current defense budgeting decisions are driven by a desire to compete with the U.S. and whether the U.S.'s decisions are still motivated by the need to contain Russia.



Although some observers believe Russia could spark an arms race in Europe, others view NATO's European members as partners in sharing the defense burden needed to render the world secure for the U.S. and Europe alike. Believers in the reality of transatlantic burden-sharing can point to NATO's remarkable resilience since the end of the Cold War. In effect, far from dissolving after the collapse of the Soviet menace it was designed to combat, NATO has expanded both its membership and missions. In terms of membership, the alliance has grown from 15 member nations in 1989 to 28 today—an accomplishment that largely consisted of incorporating into NATO nations that had belonged to NATO's former rival, the Warsaw Pact (DeHart, 2008). In terms of mission, NATO has gradually transitioned from an organization dedicated to the defense of its members' territory to an organization with a broader agenda of peacekeeping and crisis management (North Atlantic Council, 1999). Over the course of successive interventions in Bosnia-Herzegovina (1995), Kosovo (1999), Afghanistan (2001), and Libya (2011), NATO has demonstrated its capacity to undertake new missions.

In certain respects, NATO appears more solid today than at any time in the past. Within this context, experts have observed a notable convergence in the published national strategies and defense policies of NATO member nations (Serfaty & Biscop, 2009). One of the most notable developments has been Germany's slow emergence from the pacifist shell it forged after World War II to play a more active role in NATO's foreign interventions. Progressing incrementally from providing medical aid in Bosnia to conducting counterinsurgency operations in Afghanistan while increasing the professional component of its armed forces, Germany has gradually become a full partner in NATO's new missions (Kümmel, 2006; Noetzel, 2010). Likewise, by choosing to rejoin NATO's integrated force structure in 2008, France's government put an end to the diffident stance that President Charles de Gaulle adopted towards NATO in 1966 and, thereby, re-incorporated one of Europe's premier armed forces into this U.S.-led alliance (Cameron & Maulny, 2009; de Russé, 2010). As a sign of the growing strategic concord between the U.S. and its European allies, NATO's heads of government adopted a new joint strategic



concept (i.e., “Active Engagement: Modern Defense”), highlighting their agreement on key strategic issues (North Atlantic Council, 2010).

Part and parcel to the strategic beliefs shared by NATO governments on both sides of the Atlantic has been the regular participation by NATO’s European members in U.S.-led military interventions. Since the end of the Cold War, *all* of the U.S.’s significant military interventions (e.g., the 1991 Gulf War, Somalia, Haiti, Bosnia-Herzegovina, Kosovo, Afghanistan, the 2003 Iraq War, the Horn of Africa, and Libya) have featured the participation of at least some European nations. With nearly 70,000 military personnel deployed abroad at any given time, most of whom are participating in joint operations with the U.S., Europe’s NATO members are the U.S.’s most significant allies when it comes to projecting power overseas (EDA, 2009; International Institute for Strategic Studies [IISS], 2011). Considering that the U.S.’s allies in the Asia-Pacific region collectively contribute fewer than 5,000 troops to U.S.-sponsored operations, Europe’s role as the U.S.’s principal purveyor of deployable military forces looms even larger (IISS, 2011). Given an ostensibly shared strategic vision and numerous joint military operations, the defense budgets of the U.S.’s European allies should be examined to ascertain whether they exhibit similar trends as the U.S., which would demonstrate both effective burden-sharing and a shared threat perception.

Figure 4 illustrates the defense budgeting trends of Europe’s six largest defense spenders in terms of aggregate annual expenditures. To ascertain whether arms races and/or burden-sharing are occurring, these budget trends must be compared to those of the U.S., as shown in Figure 1 at the beginning of this report. To recapitulate, the U.S.’s defense budget declined gradually from 1992–1998, increased gradually from 1999–2001, and increased dramatically from 2002–2011. After 2011, this trend began to flatten out.



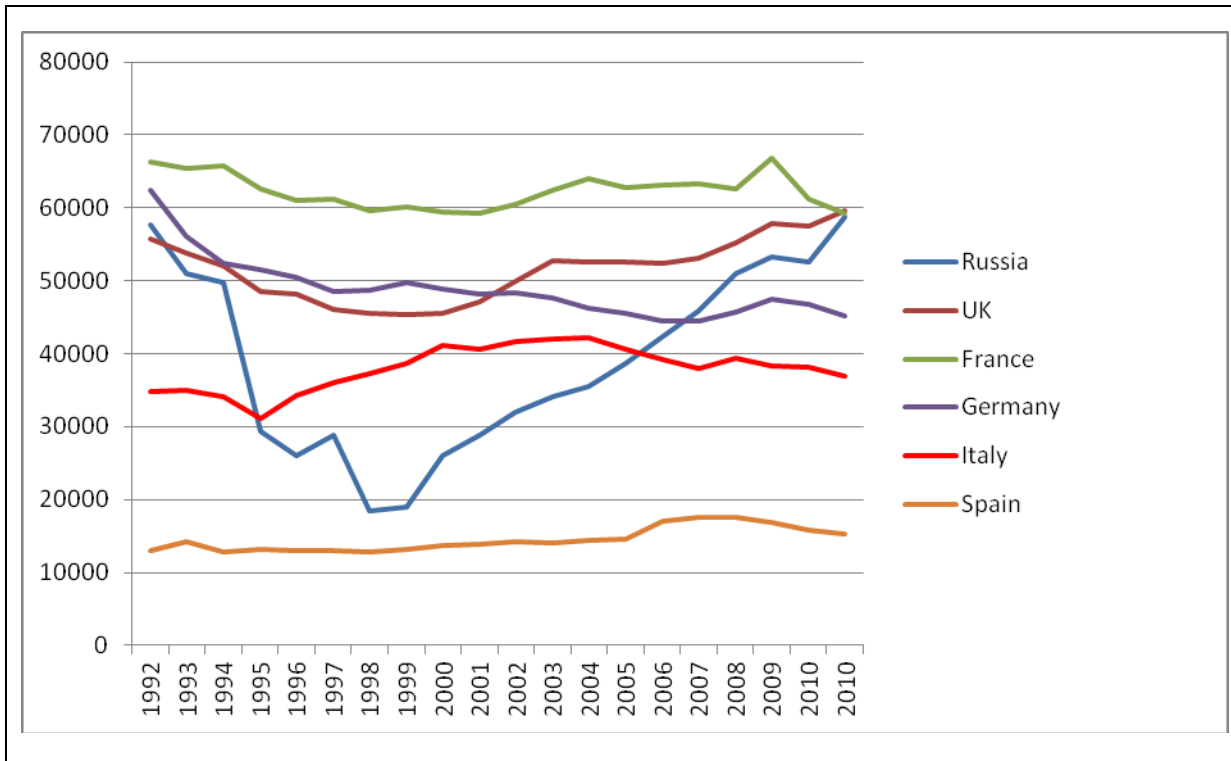


Figure 4. Comparison of European Defense Expenditures (Figures in Millions of Constant 2010 Dollars)

As may be seen in Figure 4, the U.S.'s European allies *do not* exhibit trends in defense budgeting similar to those of the U.S. Within this context, the key divergence between defense budgeting trends in the U.S. and its European allies can be traced back to 2002. Although NATO's European members invoked Article 5 of NATO's founding Washington Treaty, in solidarity with the U.S., following Al Qaeda's September 11, 2001, attacks on the U.S., the U.S.'s European allies have proven unwilling to increase their own defense budgets in a manner consonant with that of the U.S. In fact, when defense spending is examined as a proportion of nations' gross national products (GNP), as is done in Figure 5, it becomes apparent that the defense efforts of most of the U.S.'s European allies continued to decline steadily, even as the U.S.'s defense expenditures experienced massive increases. As a consequence, it can be concluded that the U.S.'s European allies are not contributing additional resources to share a security burden that U.S. policy-makers contend has become more onerous since September 2001.



Europe's NATO members are clearly not sharing the U.S.'s increased defense burden, but is Russia engaging in arms racing behavior against the United States? Is the Cold War arms race reemerging? On a superficial level, such a case might be made because both U.S. and Russian defense budgets experienced sharp upswings at approximately the same time. However, the beginning of large Russian budgetary increases can be traced to 2000, which preceded the U.S.'s defense buildup by two years. Therefore, if there is a causal link between U.S. and Russian military buildups, then the former must be a result of the latter. However, such a link would be improbable because U.S. spending was nearly 14 times larger than Russian spending even before the U.S. buildup began with the 2002 budget.

To further examine the relationship between U.S. and European defense budgets, Figure 5 examines budgeting trends in terms of the percentage of nations' national wealth, as measured by GNP, which has been devoted to defense.

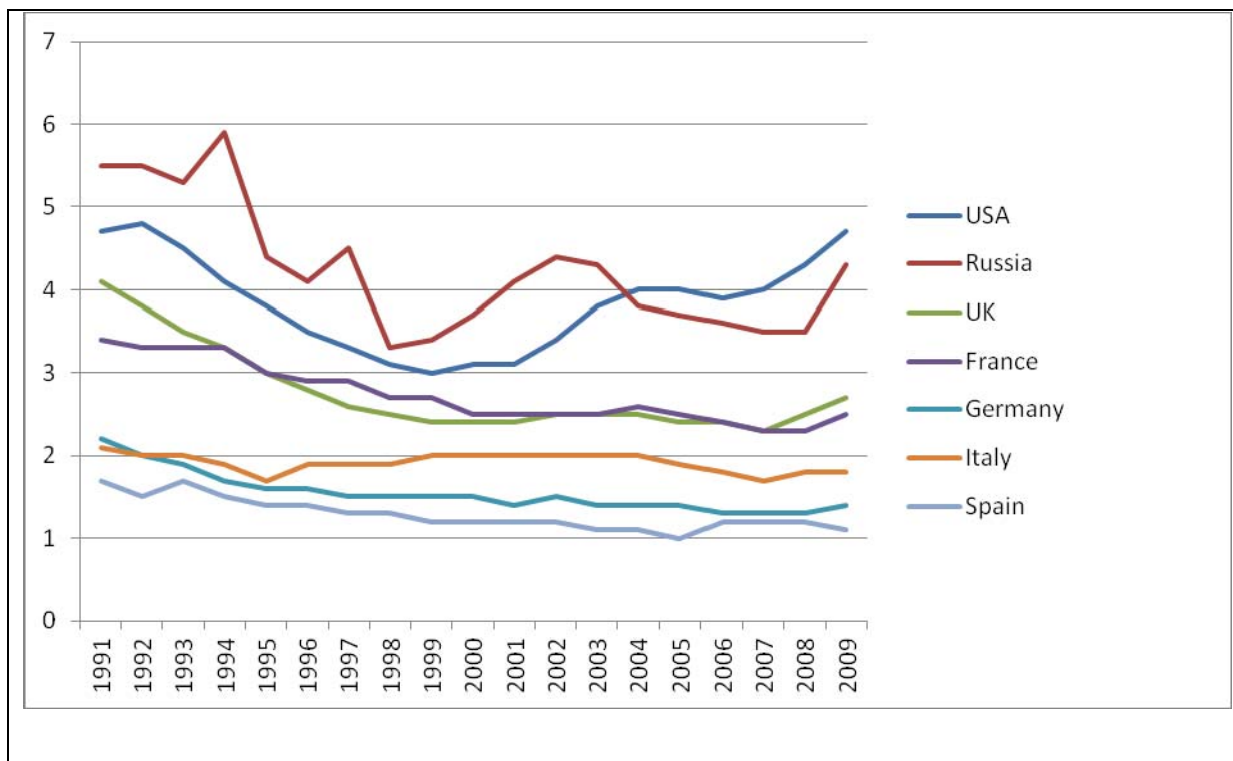


Figure 5. U.S. and European Defense Budgets as a Percentage of GNP



By analyzing defense expenditures as a proportion of GNP, rather than in absolute terms, this figure demonstrates the absence of arms racing behavior between Russia and the U.S.. Rather than reflecting a desire to match or counteract U.S. military capabilities, much of Russia's arms buildup since 2000 can be explained by the changing fortunes of Russian national finances that are highly dependent on oil and gas prices.¹² Therefore, even though Russia's defense budget has increased significantly in monetary terms since 2000, the long-term trend has actually been one of Russia devoting a smaller percentage of its national resources to defense. In fact, the years since 2004 represent the first period in recorded history when the U.S. has dedicated a larger proportion of its national resources to defense than Russia (or the Soviet Union preceding it).

A detailed analysis of how Russia is spending its defense budgets further proves the absence of a present-day Russo-U.S. arms race. After a decade of chaotic defense budgeting following the Soviet Union's collapse, the bulk of Russia's growing defense budget is now dedicated to reestablishing Russia's status as the preeminent power within the regions its leaders consider Russia's historic sphere of influence. Within this context, maintaining credible military options for the Caucasus, Central Asia, and the Soviet Union's former European possessions (e.g., Belarus, Moldova, and Ukraine) constitutes Russian defense planners' primary objective (Rukshin, 2005). Although it may be debated whether Russia has any right to hegemony in its self-described "near abroad," preserving this state of affairs is a modest ambition and one compatible with the maintenance, rather than modification, of the international status quo. Those resources that have not been dedicated to reasserting Russian preeminence in these regions have been allocated to the urgent

¹² The reason for the high degree of volatility in Russia's defense expenditures as a proportion of GNP lies in the nature of both Russian state revenues and defense budgeting. On the one hand, Russian state revenues are subject to substantial annual variations because they depend on the value of raw material (oil and gas) exports. On the other hand, Russia's system of defense budgeting, which was inherited from the Soviet Union and is termed the Arms Program, operates on a five-year planning cycle that allows for neither annual updates to the program nor a moveable time horizon (Zatsepin, 2005).



task of re-capitalizing a defense-industrial base that was starved of resources for over a decade (Bjelakovic, 2008).

In parallel with these prosaic, albeit needed, investments, Russia's attitude towards strategic weapons, which drove the Cold War arms race, has been remarkable for its restraint. In fact, Russia has proven far more proactive than the U.S. in pushing for further Russo-U.S. arms control agreements. Thus, it was the U.S. Senate rather than the Russian Duma that prevented the implementation of the second Strategic Arms Reduction Treaty (START II) by refusing to ratify an addendum to the agreement (Woolf, 2010a). After the collapse of START II, it was Russia rather than the U.S. that pushed for additional talks and proposed a dramatic reduction of nuclear forces to a level of 1,550 warheads per nation (Woolf, 2010b). Compared with these initiatives, the U.S.'s own actions, such as its 2002 release of an offensive "Nuclear Posture Review" and withdrawal from the Anti-Ballistic Missile (ABM) Treaty, have been far less conducive to the continued reduction of Russian and U.S. nuclear forces (Evstafiev, 2007; Hildreth & Woolf, 2010). Nevertheless, Russia has not responded to its arms control disappointments by embarking on an arms race, but has rather proceeded with a modest modernization of its nuclear forces through the slow introduction of Topol-M (SS-27) ICBMs and Project 955 ballistic missile submarines (SSBN) (Podvig, 2004).

In sum, no direct relationship is apparent between U.S. and European decisions about how many resources societies should expend on their armed forces. Within this context, U.S. allies have made no discernible effort to share the larger defense burden that the U.S. has imposed upon itself since September 2001 and the only regional great power not aligned with the U.S.—Russia—has not attempted to either match or counter U.S. investments in military power. Given the absence of either arms racing or burden-sharing in Europe, U.S. and European decisions about how much to spend on defense appear to be fundamentally unconnected to one another.



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VII. U.S. and Asian Defense Budget and Acquisition Policy and Status

If U.S. decisions about how many resources to dedicate to defense are not linked to those of European great powers through either arms racing or burden-sharing, does the same hold true for Asia? Although U.S. policy-makers long considered Europe the most important region for the U.S.'s security, more U.S. military personnel have fought and been killed in Asia since 1945 than on any other continent. Given this legacy of U.S. military engagement—spanning the Korean, Vietnam, and Afghan Wars—it is only natural to examine whether the U.S.'s defense budgeting decisions may be linked more closely to those of significant Asian, rather than European, nations.

In many respects, a comparison of international relations in Europe and Asia provides additional reasons to suspect that the latter region may witness a greater degree of arms racing and burden-sharing than the former. Unlike Europe, which has benefited from a pacifying process of regional integration culminating in the formation of the European Union and a common currency, Asia is still subject to traditional great power rivalries and unbridled nationalism. Because Asia has also recently experienced rapid economic growth, its nations both possess greater resources for waging war and face greater needs for natural resources than was hitherto the case. For these reasons, numerous scholars have argued that Asia will, in the future, likely endure dynamics of inter-nation conflict equivalent to those Europe experienced prior to 1945 (Friedburg, 2000; Mearshimer, 2001).

Given this state of affairs, incidents since the end of the Cold War highlight the potential for great power conflict in Asia. These include China's occupation of Mischief Reef in the disputed Spratley Islands (1994); provocative Chinese missile tests into the waters surrounding Taiwan (the so-called Third Taiwan Straits Crisis of 1995–96); the Kargil War between India and Pakistan (1999); Japan's sinking of a North Korean spy ship in its territorial waters (2001); provocative North Korean



missiles tests into the Sea of Japan (2005 and 2007); North Korean nuclear tests (2006 and 2009); and artillery duels between the two Koreas over Yeonpyeong Island (2010). If Asia is more conflict prone today than Europe, then one might expect both a significant degree of arms racing between the U.S. and its potential Asian rivals, and an elevated level of burden-sharing between the U.S. and allies eager to collectively achieve a high degree of security.

Scholars and policy-makers alike focus on China as the nation most likely to engage the U.S. in an arms race. Having experienced rapid economic growth over the course of three decades, China today possesses both the world's second largest economy and second largest defense budget. However, along with these resources, China is also a nation which many scholars characterize as dissatisfied with its current position in international affairs. Resentful of the "unequal treaties" foisted upon it during the 19th century, frustrated with the province of Formosa's (Taiwan) escaping Beijing's control since the communist victory of 1949, possessing 22,000 kilometers of disputed borders, and ruled by an undemocratic elite dependent on nationalism to compensate for its lack of other forms of legitimacy, China allegedly possesses powerful motivations for challenging the status quo in Asia (Buzan, 2010; Hongyi, 2009; Wan, 2005). Because of the U.S.'s alliances with many of the nations surrounding China (e.g., Japan, South Korea, the Philippines, and Taiwan), many observers predict that China's rise will result in an intense Sino-U.S. military competition, if not war (Mearshimer, 2010).

As if to emphasize this possibility, China's biannual defense white papers single out the U.S. for criticism and obliquely state that the Chinese armed forces' principle challenge is preparing to fight a high technology war with the U.S. (People's Republic of China 2004, 2007, 2009, 2011). For its part, the U.S.'s 2002 National Security Strategy (Office of the President, 2002) condemned China's pursuit of advanced military capabilities and its 2008 National Military Strategy (Department of Defense, 2008, p. 3) characterized China as an "ascendant nation with the potential for competing with the United States." To meet this challenge, the latter document



emphasized the “need to hedge against China’s growing military modernization and the impact of its strategic choices upon international security” (Department of Defense, 2008). Given the fact that U.S. and Chinese armed forces acknowledge one another as potential adversaries, the question should be posed as to whether the two nations’ defense budgeting decisions are linked by an arms-racing dynamic.

Although a Sino-U.S. arms race is one way that the defense budgeting decisions of the U.S. and Asian nations might be linked, burden-sharing between the U.S. and its allies in the Asia-Pacific region constitutes another. As already mentioned, the U.S. is connected to Australia, Japan, the Philippines, South Korea, Taiwan, and Thailand through bilateral security agreements. Faced with China’s growing power and the danger posed by a nuclear-armed North Korea, many of these nations have sought to reaffirm their ties with the U.S. in recent years. The U.S.’s most powerful Asian ally, Japan, has collaborated with the U.S. on ballistic missile defenses since 1998; participated in an ongoing security dialogue with the U.S. since 2002; deployed troops to Iraq in 2003; and embarked in 2005 on a process designed to improve the ability of U.S. and Japanese armed forces to operate together as an integrated fighting force. As part of deepening its strategic partnership with the U.S., Japan has also committed itself to supporting the U.S. in the event of fighting in either Korea or the Taiwan Straits (Samuels, 2007).

Although Japan is exemplary in its pursuit of more robust security options in conjunction with the U.S., the U.S.’s other regional partners have also expressed their growing appreciation for the value of their long-standing alliances with the U.S. Australia, for instance, prioritized improving interoperability with the U.S. armed forces in its 1997 Strategic Policy (Australian Department of Defence, 1997) and declared its objective to remain “a highly valued ally of the United States” in its 1998 Defense Review (Australian Department of Defence, 1998a). Since then, it has contributed credible contingents to U.S.-led coalitions in Iraq and Afghanistan, announced plans to expand its high technology naval and air forces, and reaffirmed



in its 2009 Defence white paper the U.S.'s centrality to Australian security (Australian Department of Defence, 2008b; Ayson, 2010).

South Korea, too, has reaffirmed and expanded its security ties with the U.S., gradually transforming the two nations' alliance from a pact designed exclusively to protect against North Korea into a strategic partnership with broader ramifications. This process became apparent in 2000 when U.S. and South Korean leaders declared that their alliance "will serve to maintain peace and stability in Northeast Asia and the Asia-Pacific region as a whole" (Suh, 2009, p. 127). In 2003, South Korea committed itself to transforming its own military forces to remain interoperable with the U.S., contributed forces to the U.S.'s wars in Afghanistan and Iraq, and has worked with the Pentagon to develop new mechanisms for coordinating how the two nations will militarily respond to crises (Chang-hee, 2007; Suh, 2009). Given the value that certain Asian nations ostensibly place in their alliances with the U.S., it is worth examining whether they are also sharing the additional defense burden that the U.S. has assumed.

To ascertain whether arms races and/or burden-sharing link the U.S. to the Asia-Pacific region, Figure 6 illustrates the defense budgets of the U.S.'s potential rivals in this region (China and India) and its most significant allies (Australia, Japan, South Korea, and Taiwan). To determine how the defense budgeting trends of these nations compare to those in the U.S., readers should re-examine Figure 1, presented at the beginning of this report.



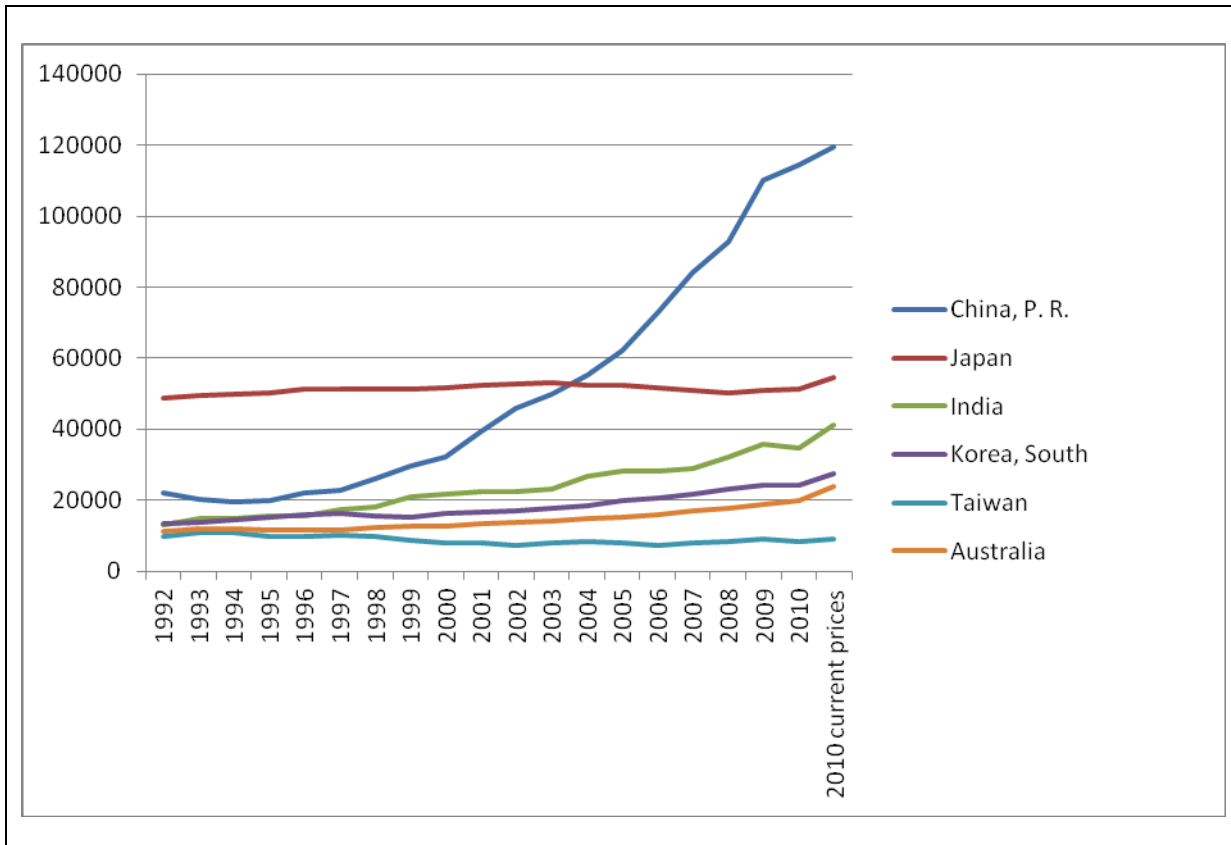


Figure 6. Asia-Pacific Defense Expenditures Compared (Figures in Billions of Constant 2010 Dollars)

As may be judged from this figure, two of the U.S.'s key regional allies—Japan and Taiwan—are clearly *not* sharing the burden of increasing U.S. defense expenditures. Although both nations have expressed their attachment to and attempted to build upon their alliances with the U.S., neither has increased its defense budgets, which have remained essentially flat (in real terms) since the end of the Cold War. Although none of the other four nations in question exhibit budgeting trends comparable to that of the U.S., what they share in common with the U.S. is that all have experienced significant growth to their defense budgets. However, whereas the U.S.'s budget expanded dramatically from September 2001 onwards, budgetary growth was comparatively linear and occurred over the course of two decades in Australia, India, and South Korea. Of all the Asia-Pacific nations examined, only China's defense budget exhibits a growth curve of equal or greater

magnitude to that of the U.S. However, the fact that China's period of spectacular budgetary growth preceded the U.S.'s by four years renders it difficult to deduce a connection between the budgetary developments in the two nations.

To ascertain whether any of the growth in defense budgets in the Asia-Pacific region can be linked to U.S. budgeting trends through either arms racing (for China and India) or burden-sharing (for Australia and South Korea), Figure 7 compares defense expenditures as a proportion of GNP, rather than in absolute terms. By capturing the share of nations' wealth that governments are willing to dedicate to their armed forces, this measure can better reveal the lengths to which nations are willing (or unwilling) to go to strengthen themselves militarily.

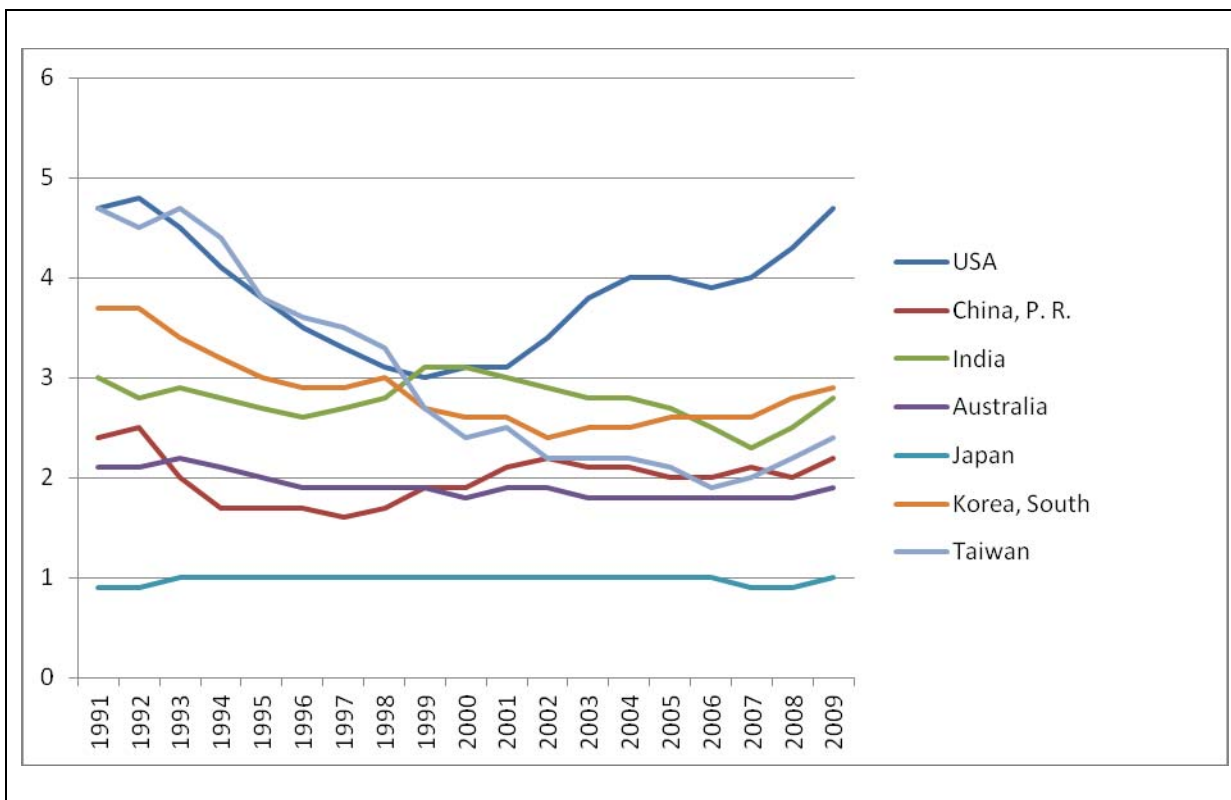


Figure 7. U.S. and Asia-Pacific Defense Budgets as a Percentage of GNP

By analyzing defense expenditures as a proportion of GNP, rather than in absolute terms, this figure demonstrates the absence of either burden-sharing or arms racing between the U.S. and great powers in the Asia-Pacific region. As may



be seen from this figure, increasing Australian and South Korean defense expenditures do not reflect a greater willingness on behalf of these nations to share the U.S.'s defense burden, but rather they reflect economic growth, which has permitted these nations to produce greater levels of military force for a degree of national effort that has actually declined over the past two decades.

Likewise, when judged in terms of the proportion of national resources dedicated to defense, the trend in Taiwan's defense effort diverges even more sharply from the trend in the U.S. Although the U.S.'s defense effort stabilized in 1999 and increased dramatically beginning with the 2002 budget, Taiwanese spending declined steadily as a proportion of GNP until 2007, at which time Taiwan was spending less than half as much, as a proportion of GNP, on defense as the U.S.. This reduction in Taiwanese defense spending at a time of rising Chinese defense budgets is arguably rendering Taiwan even more dependent on U.S. assistance than what had hitherto been the case (Liu, 2011; Willner, 2011). In short, as in Europe, the U.S.'s allies in the Asia-Pacific region are *not* sharing the larger defense burden that the U.S. government has imposed upon itself since September 2001.

Likewise, an analysis of defense budgets as a proportion of GNP proves the absence of an arms race between the U.S. and China (or India for that matter). Although China's defense budget has increased dramatically over two decades, this is a product of China's economic development, rather than a willingness to invest a larger share of national resources to overtake U.S. military developments. An in-depth analysis of Chinese defense policy reinforces this finding. Ever since Chinese Communist Party Chairman Deng Xiaoping articulated his "Four Modernizations" policy in 1978, which relegated defense to the fourth place amongst China's development priorities, the strengthening of China's armed forces has been



considered tributary to and dependent on the development of the country's economy as a whole (Deng, 1985; Pollack, 1980).¹³

Having experienced the stifling economic impact of excessive military preparations during the regime of Chairman Mao Zedong, Deng and his successors have kept defense expenditures within such limits that Chinese economic growth would not suffer. Most recently, this concern for not overtaxing the economy was encapsulated in the inclusion of the slogan “prosperous nation with a strong military” into the Chinese Communist Party’s platform in 2007 (Lai, 2010). Even though the Chinese government acknowledged in its 2004 defense white paper (People’s Republic of China, 2004) that the U.S.’s post-9/11 military buildup was widening the existing military imbalance, it refrained from dedicating a greater share of China’s national resources to offset U.S. actions.

In keeping with this policy, China has sought to develop counters to U.S. capabilities that are both asymmetric and affordable, rather than attempting to compete more directly with U.S. advantages in conventional high technology warfare. It is within this context that China is developing anti-satellite weapons; “cyber-war” capabilities; a large submarine force; anti-ship ballistic missiles; and a substantial conventionally armed medium-range ballistic missile force (Cliff, 2011; Cole, 2007; Lipicki, 2011; Scobell, 2010). However, this concentration on so-called “anti-access/area-denial” capabilities must be recognized as one of leveraging a fixed budget to improve China’s ability to deter and, if necessary, fight a war with the U.S. in the Taiwan Straits or Korean Peninsula, rather than an attempt to achieve any form of across-the-board military advantage. That China’s current and planned

¹³ To understand the relationship between economic development and military power that has prevailed in post-Mao China, it is worth citing Deng Xiaoping at length. According to Deng, “The four modernizations include the modernization of defense. But the four modernizations should be achieved in order of priority [i.e., with defense last]. Only when we have a good economic foundation will it be possible to modernize the army’s equipment. ... If the economy develops, we can accomplish anything. What we have to do now is to put all our efforts into developing the economy. That is the most important thing, and everything else must be subordinated to it” (Deng, 1985).



measures are probably insufficient even for this limited objective is openly acknowledged in the pages of Chinese military publications, as is the fact that it will take several decades of uninterrupted economic growth before China can confidently engage in an arms race with the U.S. (Lai, 2010, pp. 8–11).

In summary, there is no direct relationship between U.S. and Asian decisions about how many resources societies should expend on their armed forces. Although the U.S.'s allies in the Asia-Pacific region have made no additional effort since 2002 to share the larger defense burden that the U.S. has imposed upon itself, the two regional great powers not aligned with the U.S.—China and India—have not drawn more deeply on their national resources to match U.S. investments in military power.



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VIII. Why Do Plans, Policy, Programs, and Activities Not Match?

Considering the pervasive impact of the U.S.'s defense budgeting and acquisition policies on so many facets of the international security environment, it may appear surprising that the U.S.'s decisions about how many resources to dedicate to its armed forces appear fundamentally unconnected to those of other great powers in either Europe or Asia. However, the findings are quite stark. The U.S.'s potential great power adversaries are not basing their decisions on how many resources to dedicate to their armed forces on a desire to offset (even at a much lower absolute level of expenditure) U.S. budgeting trends. Likewise, the U.S.'s allies have not followed the U.S.'s lead in either lowering or raising their level of defense expenditures. How does one explain the absence of either a measurable degree of arms racing or burden-sharing amongst the U.S. and the other principal nations in the international system?

For the great powers not aligned with the U.S.—a category including China, India, and Russia—the unwillingness to engage in an arms race with the U.S. can largely be explained by the size of the U.S. economy, the overwhelming nature of its military expenditures, and the value of the arsenal of weaponry it has already accumulated. In effect, it is assumed that the U.S.'s economy is and will likely remain stable (compared to most nations') for some time and, hence, remain the world's largest. Combined with the U.S.'s fundamental economic strength is the size of its ongoing defense expenditures, which are over five times China's, 11 times Russia's, and 17 times India's. Attempting to achieve anything comparable with the U.S.'s degree of military power would require an economically crippling increase in the proportion of national resources these nations dedicate to defense.

Such is especially the case because, from the perspective of a potential arms race, all three nations would be beginning from a position of substantial weakness. With Russia's armed forces having been significantly under-capitalized since the end



of the Cold War, many of China's units still being equipped with weaponry of 1960s vintage, and India seemingly incapable of piloting any one of its ambitious defense-industrial projects to a successful conclusion, all three nations face a long road ahead before they will be capable of wholly equipping their existing armed forces with modern weaponry. Given the huge challenges they would face, none of these nations appear eager to repeat the Soviet Union's error of engaging in an open-ended arms race with an economically larger U.S.. In China, the preoccupation with affordability has prompted investments in asymmetric anti-access and area-denial capabilities for use against the U.S. in the unlikely eventuality of war. In Russia and India, similar worries about affordability have led to investments designed to enable both nations to assert themselves as regional powers, rather than efforts to offset the U.S.'s advantages. Thus, no nation appears likely to challenge the U.S. to an arms race for the present or over the next decade. This observation, we believe, will hold true for China based on our assumption that although the U.S. will need to develop plans and capabilities to counter potential Chinese capabilities and actions, this will not result in what is generally conceived of as an "arms race" per se.

Although a lack of realistic prospects for success explains the unwillingness of the U.S.'s potential rivals to engage it in an arms race, the question must be asked as to why the U.S.'s allies do not exhibit a greater willingness to share its defense burden. Given the rhetorical attachment that all of these nations have expressed for their alliances with the U.S., the demonstrable absence of burden-sharing in budgeting decisions must be attributable either to a desire to *free ride* on the U.S.'s provision of security or to *differing perceptions* about the acuteness of security threats and how to deal with them.

From an economic point of view, alliances should be viewed as providers of collective goods, wherein two or more nations collaborate to provide a good—security, in this case—that is shared equally by all members. Because the common security provided by an alliance is the sum of the contributions provided by each ally, members' contributions are, at least to a degree, substitutable. As Mancur Olson



and Richard Zeckhauser first argued in 1966, it is this substitutability of contributions that makes free riding a problem for alliances. The reason for this is that, given a static threat environment, an increase in one member's defense effort creates incentives for its alliance partners to reduce their own contributions as doing so will not result in a net decline in security (Olson & Zeckhauser, 1966; Sandler & Hartley, 1995, pp. 19–51). Empirical studies demonstrate that certain past increases in U.S. defense spending have produced precisely this phenomenon. For example, high levels of U.S. defense spending during the administrations of Dwight Eisenhower and Ronald Reagan permitted European allies to devote fewer resources to defense, thereby free riding on the U.S. public's willingness to spend more on defense (Sandler & Hartley, 1999, pp. 37–41). Thus, an ally can, under certain circumstances, rely on the defense provision of its partners to underwrite its own national security.

When analyzing the current security environment, it becomes apparent that the scale of U.S. defense expenditures provides ample scope for allies to free ride on the U.S.'s provision of security (Kapstein, 1992, pp. 169–172). At a time when the U.S. is investing nearly \$700 billion per annum on defense, the marginal impact of lower spending by allies is comparatively small. It is within this context that high and growing U.S. defense budgets since the end of the Cold War may have encouraged nations such as Germany, South Korea, and Taiwan to economize on the proportion of their national wealth dedicated to security. Over the longer term, Japan has also quite explicitly benefited from a “cheap ride” on security, at least since its government's 1967 decision to freeze defense spending at 1% of GNP (Samuels, 2007, pp. 39–45). Given this circumstance, if the U.S. government wants its allies to contribute more to the common defense, it must be prepared to contribute less (Kapstein, 1992, 171–172; Gholz, Press, & Sapolsky, 1997).

The practical limit on allies' ability to free ride on the U.S.'s provision of security is their fear of abandonment. Because an alliance with the U.S. offers many nations a considerable gain in security compared to what they could



achieve on their own, the U.S.'s allies are generally loath to act in ways that would alienate the U.S. government to such a degree as to jeopardize an alliance's continued existence. For this reason, allies cannot openly shirk burden-sharing, but, instead, seek to determine the minimum amount they must contribute to preserve their ties with the U.S.. To this end, allies generally favor those policies that generate a maximum amount of political capital in Washington, DC, at minimum expense over alternatives that may be less appreciated by the U.S. government. At some level, this is one of the reasons why so many allies are willing to contribute forces to U.S.-led interventions, sign up for high profile projects such as ballistic missile defense, and place interoperability with the U.S. high on their agendas (Samuels, 2007, pp. 86–108; Suh, 2009). Given the countervailing pressures of allies' desire to minimize defense expenditures and their fears of abandonment should they contribute too little, certain authors have argued that the U.S.'s allies are not pursuing a "free ride" on defense, but rather a "cheap ride" wherein they shift as much of the defense burden as possible to the U.S. (Samuels, 2007).

Besides a tendency to free ride on the U.S.'s provision of security, another reason the U.S.'s allies have not shared its increasing defense burden lies in differing perceptions of threats and how best to meet them. Although the U.S.'s allies ostensibly share concerns about terrorism, the proliferation of weapons of mass destruction, and the emergence of rival great powers, different nations clearly exhibit different degrees of alarm at these developments. For example, although the U.S.'s East Asian allies (i.e., Japan, South Korea, and Taiwan) appear comparatively unconcerned with terrorism originating in the Middle East, its European allies are much less worried about the emergence of China as a peer competitor to the U.S. (Howorth, 2007; Samuels, 2007; Suh, 2009). Even when the U.S.'s allies share U.S. perceptions of a threat, different strategic preferences can generate different patterns of defense budgeting.

A good example of this phenomenon lies in U.S. and allied responses to the danger of so-called "rogue nations" acquiring weapons of mass destruction. Over



the course of two decades, the use of preventative military attacks to halt the proliferation of weapons of mass destruction—known as “proactive counter-proliferation”—remains a viable policy option in the U.S. whose merits have been repeatedly discussed with reference to nations such as Iran and North Korea. In the 2002 National Security Strategy, proactive counter-proliferation was even elevated to the status of an official policy of the U.S. government (Office of the President, 2002). However, to be successful, a strategy of counter-proliferation must be backed up by a panoply of specialized high technology weaponry, including long-range precision weapons; “bunker-busting” munitions able to destroy hardened facilities; stealth aircraft capable of evading detection by enemy air defenses; and theater ballistic missile defense capable of fending off retaliatory missile strikes against either U.S. bases or those of allies.

In contrast to continuing, albeit fluctuating, support for counter-proliferation in the U.S., many of the U.S.’s allies have either explicitly or implicitly rejected counter-proliferation as a viable policy. Most explicitly, the 27 member nations of the European Union (23 of whom are also NATO members) ruled out counter-proliferation as an option in their 2003 European Security Strategy (European Council, 2003), the publication of which followed closely on the heels of the U.S.’s 2002 National Security Strategy (Howorth, 2007, pp. 199–214; Office of the President, 2002; Stritzel & Schmittchen, 2011). More subtly, Japan and South Korea have quietly opposed counter-proliferation as a means of halting North Korea’s nuclear program (Samuels, 2007, pp. 171–176; Suh, 2009, 121–122). By rejecting the U.S.’s policy of counter-proliferation, its allies also dispensed themselves from needing to acquire the costly military means to enact such a policy.

Thus, despite the U.S.’s broad international role and its alliance connections with a large number of nations, U.S. decisions about how many resources to expend on defense appear to exercise little impact on those of other great powers. Rather than share the U.S.’s defense burdens, allies are happier free riding on the U.S.’s provision of security and, in some instances, do not agree with either the necessity



or wisdom of certain U.S. categories of expenditure. For their part, those great powers not aligned with the U.S. accept as economically counterproductive any attempt to imitate U.S. trends in defense expenditure. Fundamentally, the reasons for the disconnectedness of the U.S.'s defense expenditures with those of other nations—whether allied or not with the U.S.—can be traced back to the high level of U.S. expenditures relative to those of all other nations. In principle, if the U.S. spent comparatively less on defense, then its allies could be predicted to engage in a greater degree of burden-sharing, and its potential adversaries would be more tempted to engage in arms races.



IX. Summary and Concluding Observations

As this report demonstrates, defense budgeting, acquisition, and financial management processes in the U.S. are a product of several distinct, oftentimes conflicting, imperatives. Because the U.S.'s political system is based on the separation of power amongst different branches of government and civilian control of the armed forces, U.S. defense budgeting procedures should accord adequate voice to a plurality of political and bureaucratic actors. However, since the ultimate purpose of defense budgeting is providing the military capabilities, generated by a combination of weapons systems and the trained personnel to operate them, needed to keep the U.S. safe, the defense budgeting process must also produce outcomes that are both efficient and well integrated with the country's foreign policy. Finally, because U.S. weapons acquisition and arms transfer policies exercise a powerful impact on the military opportunities and constraints facing other nations, the U.S. government should approach procurement and export decisions with an understanding of all the direct and indirect effects their actions might have. Having evolved gradually since the 1960s, the U.S.'s PPBES system and arms transfer procedures are sophisticated, albeit imperfect, responses to all of these conflicting demands.

Within this context, it is in their effects on international relations that the impact of the U.S.'s defense budgeting is probably least understood. This report attempts to fill this analytical void so as to provide future managers of U.S. defense budgetary and acquisition policy with useful insights as to how their actions affect global politics in the broadest sense. To this end, this report has successively examined issues such as the U.S.'s impact on the development and diffusion of new military technologies; the pros and cons of arms exports; the U.S. impact on the international arms trade; the question of burden-sharing amongst allies; and the presence or likelihood of arms races. As has already been shown, the impact of U.S. defense budgeting and arms transfer decisions is significant, complex, and, at



times, counterintuitive. Now, this concluding section explores in greater depth the policy implications of the findings presented earlier in this report.

Because of the scale and nature of its defense budgets, the U.S. plays a crucial role in the development and diffusion of new military technologies. However, the U.S. pays a heavy premium, in terms of higher R&D budgets and numerous failed projects, to generate this level of innovation. Other arms producers, by way of contrast, achieve substantial economies through “sub-optimization,” which means relying only on proven technologies and pursuing more moderate performance goals in the development of new weapons systems. Although the U.S.’s across-the-board drive for innovation was essential during the Cold War when the Soviet Union contested the U.S.’s technological lead, is it still necessary today at a time when no other nation is either pushing the technological frontier in weapon design or engaging in an arms race with the U.S.? Or might the U.S. itself sub-optimize on some future weapons systems? The inability to fund all promising procurement programs to completion (e.g., the Crusader artillery system, Comanche helicopter, and DD-21 destroyer) under even the generous post-9/11 defense budgets suggests that such a policy might actually improve the U.S.’s military strength.

The fact that the U.S. is the originator of much of the world’s new military technology should draw fresh attention to the U.S.’s technology transfer policies. In order to economically develop their own military capabilities, the U.S.’s allies and rivals alike seek to access its military technology. By transferring such technology to allies, the U.S. can strengthen nations whose security is, to some degree, interdependent with that of the U.S. However, every transfer of U.S. technology to a friend or ally comports a risk that the technology will be retransferred to potential rivals. Given a historic record that has witnessed even such close allies as Israel and the United Kingdom (deliberately or inadvertently) transferring U.S. technology to the Soviet Union and China, it can never be known for certain that the intended



recipient of a technology transfer will also be its final recipient.¹⁴ Within this context, if technological superiority is so important to U.S. security that its citizens should pay a heavy premium for military innovation, then should not the U.S. government restrict to a maximum *any* nation's access to its recently developed military technology?

Although national security concerns militate against arms sales or defense technology transfers, the very scope of the U.S.'s defense-industrial effort creates powerful incentives for an economically liberal approach towards the sale and licensed production of armaments. Not only does the size of U.S. production runs provide its arms producers with cost advantages when it comes to competing for export markets, but the U.S.'s defense R&D effort represents a sizeable diversion of human and financial resources away from the civilian economy. At present, over half of the federal government funding for technological R&D is devoted to defense, and defense contractors employ a sizeable proportion of U.S. engineering talent (Lockheed Martin, for example, is the U.S.'s largest recruiter of graduating engineers; Congressional Budget Office [CBO], 2007; Denney, 2011). Given the concentration of science and engineering resources on defense, the U.S. should logically maximize its economic return on this defense-industrial investment through a liberal arms export policy. Moreover, partisans of arms exports make the oftentimes correct argument that U.S. export restrictions only serve to create commercial opportunities for other producers, which, in certain cases, are geopolitical rivals of the U.S..

¹⁴ During the 1950s, a Soviet spy ring operating at the Admiralty Underwater Weapons Establishment at Portland, England, passed U.S. anti-submarine warfare technology to the Soviet Union. In the 1960s, the United Kingdom sold Vickers Viscount aircraft to China. Although the Viscount was a British-designed aircraft, the exported aircraft were equipped with U.S. avionics, whose export to China was proscribed by both the United States government and COCOM (the international organization created to control high technology exports to the Communist states; Bulloch & Miller, 1961; Engel, 2007, pp. 216–251).



In keeping with the U.S.'s pluralistic political system, the task of striking the proper balance between the security arguments against exports and the economic reasons for arms sales is not entrusted to any single body. Rather, both the executive and legislative branches of government, as well as a multiplicity of officials at the State and Defense Departments, determine the merits of each sales requirement on a case-by-case basis. Because the U.S.'s arms export decision-making process is comparatively restrictive and can produce unpredictable results, foreign nations are willing to sacrifice much in terms of the economic efficiency of their procurement activities in order to achieve a greater degree of defense-industrial autonomy from the U.S.. Within this context, diversified purchasing from multiple exporters, manufacturing U.S.-designed weapons under license, and developing indigenous weapons based on U.S. technologies all represent different forms of foreign hedging against unpredictable interruptions in U.S. arms sales.

Motivated, in part, by uncertain access to U.S. defense technologies, certain nations elect to maintain the highest possible degree of defense-industrial autonomy, which consists of the indigenous development and production of weapons systems. Unlike the U.S., the survival of these nations' domestic defense-industrial bases depends largely on their ability to export a large proportion of the arms they produce. However, the cost and performance advantages of U.S.-produced armaments render this task fundamentally difficult in those markets where U.S. defense contractors compete for sales.

As a consequence, the world's other armaments producers have a powerful incentive to cater to markets that the U.S. has embargoed, regardless of the political or humanitarian concerns that such sales might generate. When foreign arms producers are obliged to compete directly with the U.S. for export markets, they must rely on subsidies, a generous provision of financing, and a greater flexibility in meeting clients' delivery requirements to compensate for the superior cost effectiveness of U.S. contractors. Thus, the U.S. government's decisions about when and where to export armaments shapes other arms producers' ability (or lack



thereof) to achieve the sales volumes needed to sustain domestic defense-industrial bases.

Although the U.S.'s allies covet its defense technologies and frequently import a large proportion of their armaments from the U.S., they have systematically resisted calls to follow the U.S.'s example in consecrating a larger proportion of their national wealth to defense. Because the security provided by a military alliance is a collective good whose benefits are shared by all members, a unilateral decision by one nation to increase its investment in defense creates opportunities for its partners to reduce their contributions, provided that the aggregate amount of security generated by the alliance is still considered sufficient. It is within this context that the U.S.'s post-9/11 military buildup has encouraged its allies to free ride (or "cheap ride") on its provision of security, rather than increase their own contributions as a form of burden-sharing. Thus, many of the U.S.'s allies have cut their defense budgets, either in real terms or as a proportion of GNP, even as the U.S. has spent more. This has resulted in such seemingly paradoxical situations as Taiwan reducing its defense effort even as the U.S. implemented budget increases designed, in part, to contain Chinese ambitions in Asia. Likewise, even as the U.S. invested significant sums in fighting terrorism across the globe, two allies whom immigration has rendered more potentially vulnerable to Salafi terrorism—Germany and Spain—cut their defense budgets.

The current prevalence of free riding on the part of many U.S. allies has counterintuitive implications for U.S. defense budgeting. Because any cut in U.S. defense budgets reduces its allies' ability to free ride, lower levels of defense spending in the U.S. will not necessarily generate a commensurate decline in national security. In principle, allies will compensate, at least in part, for cuts in U.S. defense spending by increases in their own spending. Therefore, the real security impact of U.S. defense budget cuts will logically be somewhat less than the magnitude of the cuts would suggest. Of course, before using the collective goods theory to justify defense budget cuts, it is necessary to closely examine to what



extent U.S. defense spending actually provides a collective good (i.e., security) *shared* by allies. If allies hold fundamentally divergent threat perceptions or are normatively attached to different strategies than the U.S., then they will be less likely to substitute their own contributions for a reduction in U.S. expenditures. Thus, the degree of burden-sharing between the U.S. and its allies will always likely be a function of both the scale of U.S. defense spending and the level of strategic concord prevailing between its allies and itself.

Although high levels of U.S. defense spending currently encourage allies to free ride on its provision of security, they also appear to have dissuaded potential rivals from engaging in an arms race. Although China and Russia view the U.S.'s global presence as a challenge to their own regional ambitions, the U.S.'s existing military advantages and the magnitude of its defense spending are such as to deter either nation from increasing the proportion of its national resources dedicated to defense in a vain effort to compete with the U.S.. Within this context, today's great powers appear to have learnt the lesson of the Cold War's arms race, which is that it is counterproductive to engage in an open-ended defense-industrial competition with a nation far wealthier than one's own. As a result, neither contemporary Russia nor post-Maoist China is likely to replicate the Soviet Union's mistakes. Rather, both are keeping their defense expenditures within reasonable limits and are striving to acquire the best mixtures of military capabilities commensurate with their budgets and foreign policy ambitions. In theory, arms races should only reemerge as a characteristic of the U.S.'s relations with other great powers once economic growth and/or a decline in U.S. defense spending permits other nations to compete with the U.S.

Considering the many ramifications of U.S. budgetary choices on the international system, defense budgeting should no longer be viewed as a purely domestic process for funding the equipment, training, and high level of operational readiness needed for the U.S.'s armed forces to effectively enact the government's foreign policy. Rather, U.S. budgeting and arms transfer policies have direct and



indirect effects on other nations' decisions about how many resources to dedicate to their armed forces; what types of capabilities they should develop; and whether they should import weapons, build them under license, or attempt to develop them domestically. At a more fundamental level, U.S. defense budgeting and transfer decisions shape how the international market for armaments functions as well as how new military technologies are developed and diffused throughout the international system. Only by adapting U.S. defense budgeting, acquisition, and financial management policies and processes to take into account these frequently unanticipated or, at least underappreciated, effects of the U.S.'s actions, can the nation achieve the foreign policy outcomes desired by its government and citizens.



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